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THE ARCHAEOLOGY OF TWO HUDSON'S BAY COMPANY POSTS:
BUCKINGHAM HOUSE (1792-1800) AND EDMONTON HOUSE III (1810-1813)

by



GERTRUDE C. NICKS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
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UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Archaeology of Two Hudson's Bay Company Posts: Buckingham House (1792-1800) and Edmonton House III (1810-1813)" submitted by Gertrude C. Nicks in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

If history and archaeology share an interest in the study and elucidation of man's past, they differ in the nature of the data on which their research is based. The lines of research pursued by specialists in these fields become complementary when both cover the same period of time, and, broadly speaking, the same event. Thus the pursuit of historic, or text-aided, archaeology provides a more nearly complete record of a past culture and as well has a built-in means of cross-checking interpretations of data.

The thesis is mainly concerned with a descriptive account of two Hudson's Bay Company posts on the North Saskatchewan River based on documentary and archaeological research. The first post, Buckingham House, remains of which are located near the present town of Elk Point, Alberta, was occupied from 1792-1800. The second post, Edmonton House III, which shared a palisade with Terre Blanche or Fort White Earth of the North West Company, operated between 1810 and 1813. Remains of these posts, now commonly known as Fort White Earth, are near the present town of Smoky Lake, Alberta.

Like other posts on the North Saskatchewan River where it passes through the parkland, Buckingham House and Edmonton House III served as provisioning depots for more northerly posts as well as fur-trading establishments. A brief discussion of the personnel of the posts and of the seasonal round of activities derived from the post journals is presented. Likewise based on historical accounts are some suggestions as to the mutual dependence of trader and Indian.

From trading post journals and excavations, extensive

information has been assembled concerning the physical layout and construction of the posts. On the basis of these data plus findings at other excavated sites on the North Saskatchewan some discussion is centered on the question of distinctions in architectural styles employed by the North West and Hudson's Bay Companies.

The excavated samples of artifacts and faunal remains are described in appendices. Further research on the artifacts is aimed at isolating particular classes or types of artifacts which appear to be indicative of either a particular company or of a known, preferably short, span of time. Two additional artifact collections from securely dated North Saskatchewan posts. Fort George (1792-1800) and Pine Island (1786-1794) of the North West Company, were consulted with reference to these problems. This study, including some architectural traits, is intended as a beginning toward a trait list which will be useful in identifying historic sites on the North Saskatchewan which cannot certainly be specified from documentary evidence. The traits isolated in this preliminary study were used to check the identifications of two unclearly documented North Saskatchewan posts excavated by Barka and Noble. A third fur trade site tested by R. S. Kidd is tentatively identified.

ACKNOWLEDGEMENTS

The nature of archaeological data precludes research of any magnitude being carried out by one person. The assembly of archaeological information for the present work was made possible by the contributions of many individuals to whom I wish to express my appreciation.

Permission to excavate the sites of Buckingham House and Edmonton House III/Terre Blanche (Fort White Earth), both owned by the Province of Alberta, was arranged by Mr. Bruce McCorquodale, Head Curator at the Provincial Museum and Archives of Alberta, and Mr. R. S. Kidd, Curator of Archaeology at the same institution. Funds to support excavations were arranged by the same individuals.

In 1966 Mr. Kidd directed excavations at Buckingham House and a brief test at Fort White Earth by a crew consisting of myself as assistant archaeologist, Wes Mattie, John Elson, Lester Smith, and Steve Andrishak. The latter individual also kindly allowed me to photograph his private collection of fur trade artifacts.

Excavations in 1968 at Fort White Earth were directed by J. S. Nicks, again with myself as assistant archaeologist; and with the able assistance of Ross Thomson, Reinhard Lehne, and Tim and Jenny Losey. Archie Herbert and David Gay contributed two weeks each of voluntary labor. The members of an extension course in archaeology instructed by my husband and me worked one day at the site.

Community members did much to accommodate the crews of both seasons. Mr. and Mrs. O. Fedorus of Elk Point, Alberta, and Mr. and Mrs. P. Chetek of Smoky Lake, Alberta, were especially helpful to the 1966 and 1968 crews respectively.

Facilities for artifact and faunal analysis were made available by Museum officials. Numerous members of the Museum staff were very helpful in this phase of research. Further assistance in artifact analysis was given by Mr. J. P. Cloutier of the National Historic Sites Division who took time from a conference to examine and discuss the ceramics found at Fort White Earth and Buckingham House.

The historical research undertaken received some very important assistance also. I wish to thank the Governor and Committee of the Hudson's Bay Company, London, England, for permission to consult the records of the Company on microfilm in the Public Archives of Canada. This research was substantially aided by a travel grant awarded by the Committee on Grants from the John S. Ewart Memorial Fund at the University of Manitoba. Mr. D. H. Bocking of the Saskatchewan Archives Board kindly arranged the assembly and xeroxing of pertinent material from the manuscript of Morton's Historical Geography of Western Canada.

Preparation of the final report of course was the pleasure and the task of the author. Several individuals generously gave their permission to use unpublished reports in the preparation of the present work. These were: Dr. Norman Barka, Dr. R. Forbis (for Dr. W. Noble), Mr. Anthony J. Ranere, Mr. R. S. Kidd, and Mr. R. Conn. Carolynn Poon undertook the final preparation of Figures 2 through 16 for duplication.

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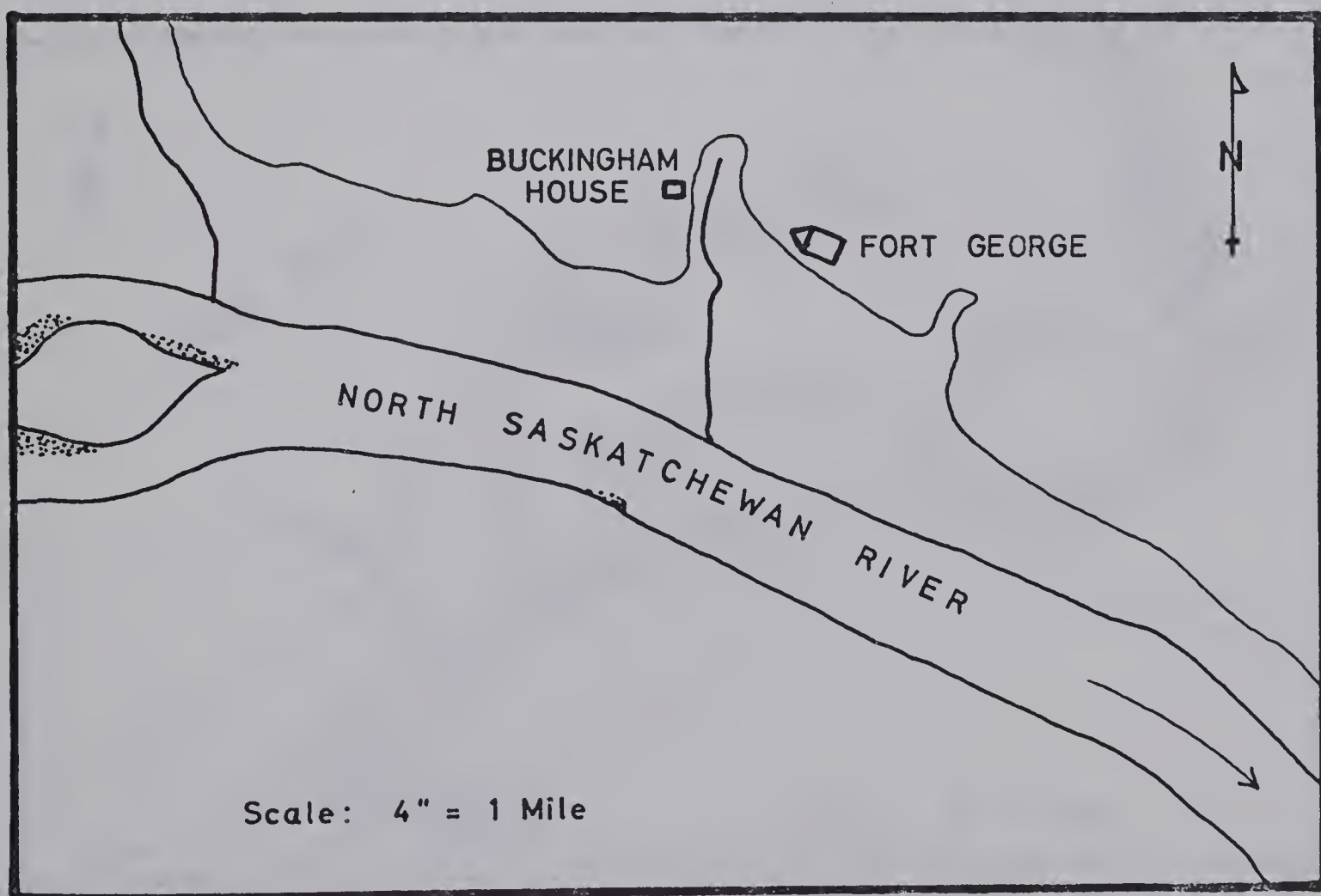
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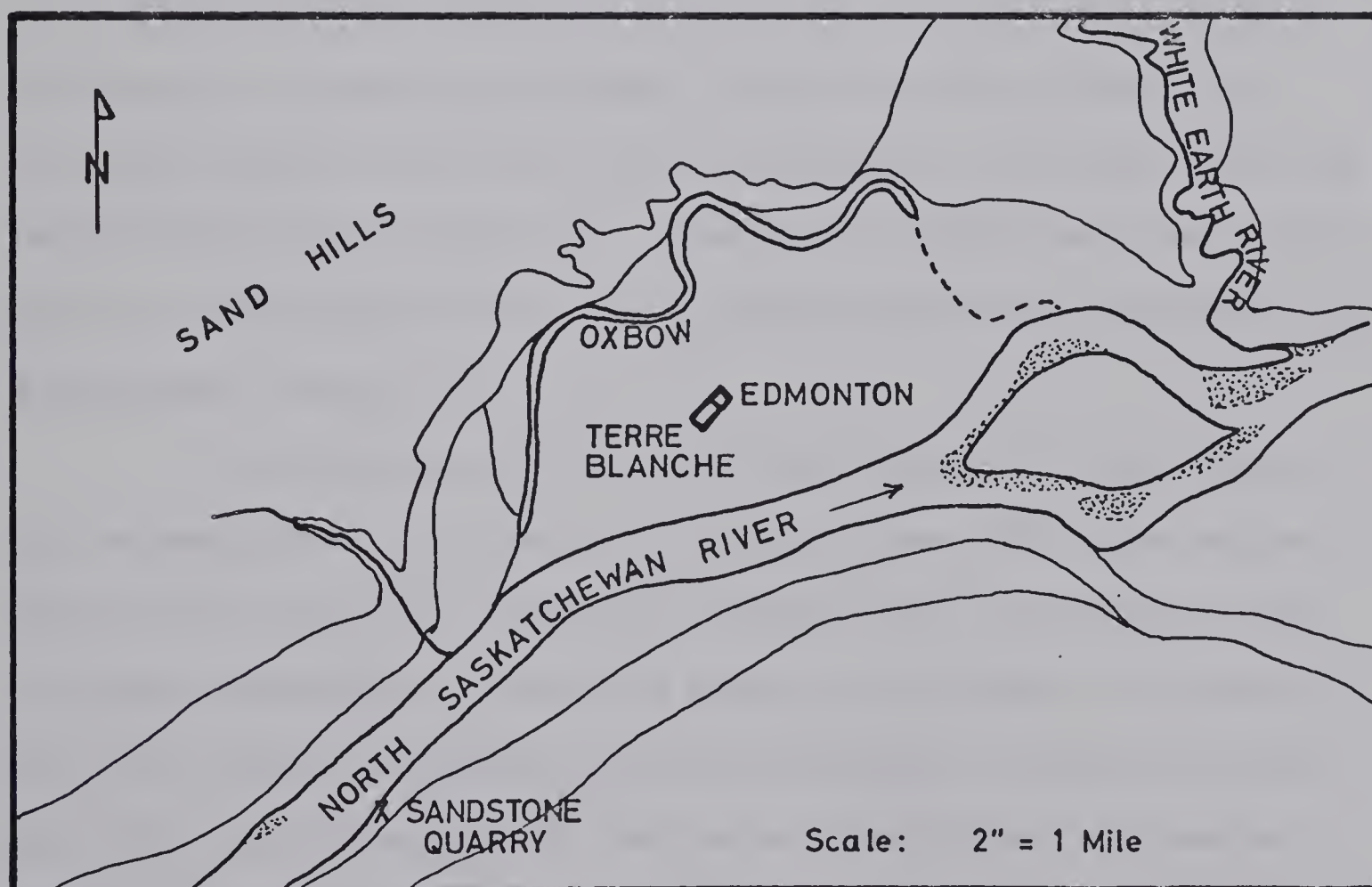


BUCKINGHAM HOUSE and FORT GEORGE POSTS

(Aerial photo used with permission of Alberta Department of Lands and Forests.)



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EDMONTON HOUSE III and TERRE BLANCHE POSTS

(Aerial photo used with permission of Alberta Department of Lands and Forests.)


CHAPTER I

INTRODUCTION

The fur trade period in Western Canada has been the subject of specialized study by historians for some time, but it is only recently that archaeological research has been directed to sites of this period, particularly in the province of Alberta. This thesis presents the results of archaeological research at two Hudson's Bay Company posts on the North Saskatchewan River within Alberta. The earlier post, Buckingham House, near the present town of Elk Point, was occupied from 1792 to 1800. Edmonton House III, the second post, was occupied from 1810 until 1813; remains of this establishment are southeast of Smoky Lake, about six miles downstream from the Victoria settlement at Pakan. Some account is given of preliminary research at Terre Blanche, the North West Company post which shared the same site and, indeed, the same palisade with Edmonton House III. Comparative studies have been limited mainly to other excavated sites on the North Saskatchewan in Alberta and Saskatchewan (see Fig. 1).

In its broadest sense the problem dealt with in this study is the reconstruction of all aspects of life at these posts. The nature of the data does not allow a complete reconstruction, but certainly there is enough information to define the pattern of settlement; the technology of the traders, including construction methods; the material culture generally; the economy, and to some extent relationships with native peoples. On the basis of this data an attempt has been made to delineate artifactual traits specific either of the North West Company or the Hudson's Bay Company or of the general period of time in which

1. Pond's Fort Sturgeon (Independent). 1776-1780.
2. Carlton House (HBCo.). 1810-1885.
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A vertical number line with a horizontal line. A tick mark is labeled '50' and another tick mark is labeled '100'.

these posts operated.

The research design followed involved a combination of archaeological and historical research. Both sources of data were used as they cast light on specific problems, but the study as a whole rests most heavily on archaeology. Perhaps the greatest value derived from the post journals and secondary historical sources consulted was in creating a context and limiting the number of interpretations which might be made from the archaeological evidence alone. For example, the many fragments of flat green-tinted glass found at Buckingham House suggest this material originally formed windows or possibly mirrors used in trade. Post journals revealed that window glass was not available during this period for use in the Saskatchewan posts, and one of the possible interpretations could be ruled out. In addition the documents frequently provide information not easily derived from the charred and rusted remains or information not even represented archaeologically. For example, while traces of the blacksmith's activities are relatively easy to identify, the presence of the tailor who worked with more highly perishable materials is only suggested by such objects as buttons, pins and needles, and a few scraps of cloth and orris lace. These objects might well have been trade objects or remnants from clothing made elsewhere or objects used by the men or their women. The only sure evidence for the presence of a tailor lies in the historical record and not in the ground.

Archaeological research at both fur-trading posts was initiated in 1966 under the auspices of the Provincial Museum and Archives of Alberta. In that season a crew of three to five people under the direction of R. S. Kidd, Curator of Archaeology at the Museum,

conducted extensive test excavations at Buckingham House during July and August. Two trenches, oriented at right angles to each other, were extended across the site, the outlines of which were visibly delineated by a greater density of vegetation along the palisade lines. Five major features, a cellar, two sections of stockade posts, an ash pit and a fallen timber, were located and extensively excavated.

In late August and early September of the same year a brief test was made in the east end of the Edmonton House III/Terre Blanche site, revealing extensive charred building remains within the uncultivated but densely overgrown portion of the site. Fuller excavation and mapping of the site was carried out in July, August, and early September of 1968 under the direction of J. S. Nicks, working under contract to the Provincial Museum and Archives of Alberta under the general supervision of R. S. Kidd. In both seasons of excavation and at both sites the author acted as assistant to the director.

The decision to excavate these particular sites was made as part of an overall research plan for historic sites archaeology developed by the staff of the Provincial Museum. Other work carried out under this plan has included Kidd's three season (1965-67) program at Fort George, the North West Company counterpart to Buckingham House. His report of these excavations is in the final stages of preparation for publication by the Museum.

The same basic excavation procedure was adopted at both sites. Initially, a base line was laid out with transit and a steel chain, and then expanded into a five foot grid system. All measurements in the field were based on the English system (on the foot), in part because the available equipment used this system and because the building plans

we were seeking to uncover were originally laid out in these units. In the laboratory feet and inches were used when they were the customary measures; for example, nails have been most frequently described in the literature in terms of inches. Where no conventional units were involved, however, the more universal metric system of measurement was employed. Each stake was given an east-west and north-south designation, according to its position relative to an arbitrary ONOW stake. Thus, the stake immediately north of ONOW would be 5NOW and the stake immediately west would be ON5W and so on. The designation of the north-west stake served to identify each unit of excavation.

All excavation was done by hand, although it would have been quite feasible to use power equipment to remove the disturbed zone in cultivated portions of the sites. Instead, shovels were used to remove the disturbed soil, while all excavations in uncultivated areas were done with trowel and dustpan. In these areas one-foot baulks were left in each unit. Except where important profiles were involved, these were usually removed in favour of uncovering a complete structural unit. Initially, all earth was put through a quarter inch or three-eighths inch mesh, but this practice was ultimately accorded only fill material taken from structural features. Fine window screening was used sporadically as a "bead screen".

Artifacts found in situ were located both horizontally and vertically. In the appendix of artifact descriptions provenience is given by feature number or other more general association. The vertical placement was, in most instances, of secondary importance, as both sites are single occupation in the sense that they were used continuously, or nearly so, by the same company for the same purpose and for a short

period of time. This is not to say that information concerning the sequence of events, the filling in of cellars and the origin of fills, for example, could not be obtained from studies of the vertical placement of artifacts. In sites with a longer period of occupation such studies would be necessary to refine dates attributed to artifacts and structural events. Although some change might be expected during the eight years that Buckingham House was occupied, the site is not well suited to such detailed analysis because of the destruction and disturbance of most of the site in clearing the land and cultivating it in the years subsequent to its occupation.

Topographic and contour maps were made of both sites, using transit and alidade with plane table. At Buckingham House all distances were chained, but at Edmonton House III/Terre Blanche most were obtained using stadia measurement. The bases for the cement cairns erected by the Alberta government at the southwest corner at Buckingham House and the west corner at Edmonton House III were used as bench marks at both sites. All plan views and selected profiles were drawn. Each crew member kept a daily record of his own work. A photographic record of the progress of excavations was kept in both color and black-and-white film. A 35 mm. color record was made, using a single lens reflex Pentax camera. The black and white record was made on $2\frac{1}{4} \times 2\frac{1}{4}$ film, using a twin lens Rolleiflex camera. All records, maps, notebooks, photographs, and artifacts are deposited in the Provincial Museum and Archives of Alberta.

Other than recording provenience, assigning a field catalogue number, and entering the artifact in the catalogue, little preparation and analysis of the archaeological material was undertaken in the field.

Although some analysis of the Buckingham House material was carried out by the author in the Archaeology Laboratory at the University of Alberta, the major part of the artifact analysis, including all the Edmonton House III material, was performed at the Museum during the fall and winter of 1968-69. For this period one crew member, Mr. R. B. Lehne, was retained to assist in cleaning, numbering, and preserving of specimens. Special preservation treatment was afforded all but the most badly corroded iron specimens. A zinc-caustic soda electrolysis method was employed in conjunction with mechanical cleaning to remove rust. Immersion in penetrating oil followed in an attempt to ward off further corrosion.

Also during this period, all faunal remains from Edmonton House III/Terre Blanche were identified by J. S. Nicks and the author, making use of the comparative skeletal collection at the Museum as well as the advice of the Museum naturalists. The faunal collection from Buckingham House, previously identified by the author at the University of Alberta, was checked against the Museum specimens. This aspect of the analysis of material is still not as complete as desirable, since the comparative collections used contain only one skeleton of each type, a situation making the problem of differences due to age or sex difficult to trace. Also, bird and fish species are not represented.

A. S. Morton, in his introduction to Duncan McGillivray's journal, has pointed out the special role of the North West Company establishments on the North Saskatchewan River, the Forts des Prairies, as provisioning depots for the more northerly posts in the fur-rich boreal forest. A major difficulty for the northern brigades was the time required for them to journey to and from the Grand Portage each

summer. These journeys could just be fitted in between break-up and freeze-up, with no time for hunting or fishing expeditions along the way. Thus, the Saskatchewan posts, situated in a favourable environment as they were, had to provide not only for their own sustenance but also for the journeys of the northerners. They came to fulfill a similar role for the Hudson's Bay Company as well.

The environment along the North Saskatchewan River at the time is suggested in the name, Fort des Prairies. For most of its course the river passes along or near the northern limit of the aspen parkland, which according to Bird (1961:3):

... contains two major plant communities, forest and grassland (prairies), which are intermingled in a mosaic of irregular isolated patches and more or less solid stands, as well as numerous aquatic communities.

Within these communities, a rich flora and fauna were available for exploitation. Bird provides an idea of the wildlife in the area at the time of contact. Animals of economic importance inhabiting or frequenting the grasslands included the buffalo (Bison bison), elk (Cervus canadensis), and the pronghorn antelope (Antilocapra americana). Many small animals (mice, voles, ground squirrels, jack rabbits, coyotes, foxes, badgers, and weasels) are and were native to this area. The latter five animals may have been of limited economic importance. Some rabbit bones found at Buckingham House suggest the occasional rabbit stew, and the other four were occasionally taken for their pelts. Of the many species of non-aquatic birds, probably only the non-migratory grouse and the migratory passenger pigeons, doves, and larks would ever have graced a trader's table.

In the forested areas of the parkland many elk were available as well as mule deer (Odocoileus hemionus hemionus). The nearly complete replacement of mule deer in most areas by the Virginia white-tailed deer (Odocoileus virginianus dacotensis) is a post-contact phenomenon (Bird, 1961). During the winter months, the bison entered the wooded areas seeking shelter, a fact of considerable importance to the traders whose posts were most closely associated with the forested stands which provided both building material and fuel. In a mild winter the bison sometimes stayed out on the plains or prairies several days away from the posts. Such was the case in the winter of 1799, and the discomfort this situation caused the traders is well recorded in the Buckingham House journals for that year (HBC Archives, B24/a/8, Reel IM18).

In and around the aquatic environments useful wildlife abounded. Moose (Alces americana andersoni), referred to as "moose deer" in the traders' journals, lived in swamps and among willow thickets. Here, too, was found the little fellow who started it all, the beaver (Castor canadensis canadensis). While his pelt was most desired in England, to the traders his flesh was a delicacy.

The lakes and sloughs supported large populations of game birds. At initial contact Canada geese (Branta canadensis), sandhill cranes (Grus canadensis tibida), and whooping cranes (Grus americana) would still have been nesting about the larger sloughs. Most of these birds have now moved north of the parkland to less disturbed areas. Many species of ducks were and still are abundant on the lakes and sloughs of the parkland--mallard (Anas platyrhynchos platyrhynchos), pintail (Anas actua), gadwall (Anas strepera), baldpate (Mareca americana), blue-winged teal (Anas discors), shoveler (Spatula

clypeata), green-winged teal (Anas carolinensis), red head (Aythya americana), canvasback (Aythya valisineria), lesser scaup (Aythya affinis), ring-necked duck (Aythya collaris), and ruddy duck (Oxyura jamaicensis rubida). Other water birds present would include coots (Fulica sp.), bitterns (Botaurus sp.), and grebes (Podiceps sp. and Podilymbus sp.). Bird bones, many of them from large species of water fowl, have been found in excavations at sites on the North Saskatchewan River, for example, Fort George, but no comprehensive analysis has yet been undertaken. There are some journal references to hunting wild fowl. These seem to have been particularly frequent in the spring, when the migratory birds brought not only variation in diet but promise of warmer weather. The variety available is suggested in the bag from two days' hunt in the spring of 1794--one crane, five swans, three geese, and ten ducks (HBC Archives, B24/a/2, Reel IM18, Buckingham House Journal, April 14-15, 1794). Daniel Williams Harmon provides an example of a less successful solitary duck hunt in 1800, during which he failed to bag any game, but did succeed in capsizing his canoe and losing his gun (Harmon, 1957:13-14).

Fish are certainly present in the lakes and rivers of the parkland, but little mention is made of fishing in the Hudson's Bay Company journals consulted. Fish bones have been recovered in excavations of Hudson's Bay Company posts (see Appendices III and IV). Duncan McGillivray, writing at Fort George in 1795, mentions a fishery maintained by the North West Company at Frog Lake, about sixteen miles due east of Fort George. He comments, "We received a few loads of very excellent fish every other day" (1929:74).

Many species of molluscs live in the rivers and streams, and

mollusc shell was well represented in excavations and on the surfaces of sites. However, no mention of their use was found in the journals consulted.

Only two predators among the wild inhabitants of the region seemed to cause enough trouble to warrant comment by the traders. One was the wolf, who often devoured the hunter's kill before it could be packed to his tent or to the fort. McGillivray (1929) records one such instance in 1794. He does not describe the type of wolf, but it may well have been the extinct large buffalo wolf (Canis lupus nubilus), then common in the parkland. A second, much smaller predator, the mosquito, the traders often found "very troublesome". Archaeologists still do.

No doubt many types of berries would have been available to supplement a predominantly meat diet. Saskatoons (Amelanchier alnifolia), chokecherries (Prunus virginiana), blueberries (Vaccinium caespitosum), strawberries (Fragaria sp.), and cranberries (Viburnum edule) were noted to be abundant near the sites during the course of excavations. Hazelnuts (Corylus sp.) are also currently plentiful and were represented by a few charred shells in the bottom-most fill of the cellar excavated at Buckingham House. Probably of greater importance than these wild plants was the vegetable supply obtained from gardens which could be grown in the parkland environment. The variety of cultigens is not impressive, however. Cabbage and potatoes were grown at Buckingham House, while the North West Company grew turnips, radishes, and barley at Terre Blanche. A few provisions were brought inland to add relish to the country provisions. In 1811 provisions brought inland included such things as butter, cheese, chocolate, coffee, molasses, mustard, prunes, raisins, spices, sugar, and tea (HBC

Archives, B/60/d/2^a, Reel IM467, Edmonton Account Book, 1810-1811).

It is misleading to imply that the traders themselves harvested the bounty of the parkland. The Hudson's Bay Company posts, in particular, were often lightly manned. What labour supply there was was usually occupied with building and maintaining posts and equipment, trading, and preparing furs and pemmican for the spring journey to York Factory. Usually one or more Indians were hired to hunt for the post to obtain the fresh supplies required. An equally important supply of provisions, mainly dried and beat meat and fat, was obtained through trade with Indians from the plains. This latter supply was the main source of ingredients for the pemmican to be supplied to northerly posts.

Even the horses kept by the traders fared well in this area. A frequently-mentioned duty of the men was cutting hay for the horses. Very likely this hay consisted of the sedges which Bird (1961:20) mentions as being common about sloughs and extending up onto land that is dry in late summer.

Posts along the North Saskatchewan had other advantages than access to provisions. Some fur-bearing animals inhabited the region. A list compiled from Bird (1961) and contemporary historical documents includes beaver, muskrat, otter, weasel, badger, foxes, and wolves. Coyote, ground squirrel, rabbit, and grizzly bear were also present, but whether or not their pelts were sought is uncertain from present research.

Near the northern limit of the parkland there are isolated stands of relict boreal forest which would support additional fur bearers. The fur-rich boreal forest itself was close enough that

Indians hunting furs there could easily come to Saskatchewan posts with their pelts.

While the availability of a double harvest of pelts and provisions was an attractive feature of a parkland location, it also caused some problems. The provisions were supplied by Indians of the plains, and the most desirable furs were supplied by Indians who lived in or north of the parkland belt. Perhaps because of traditional enmities, perhaps because the plains Indians (not understanding English fashion or tariffs) resented the fact that their provisions and wolf skins brought less than the beaver pelts of the northerners, the meeting of woods and plains groups at a post could be a tension-filled situation. As will be seen in the next chapter, the establishment of posts in new areas was undertaken to avert Indian unrest and aggression as well as to find new sources of fur or force competitors to over-extend their resources.

The availability of building materials in the parkland was also an advantage of the region. Posts along the North Saskatchewan were built of the sturdy conifers which abound along the northern margin of the parkland. In post journals "pine" is referred to as the main building material, but this term apparently was used rather loosely to cover all conifers. Wood recovered in excavations at Buckingham House and Edmonton House III/Terre Blanche was nearly always in too poor a state of preservation for identification. Four samples of wood from structures at Edmonton House III were submitted to the Department of Botany at the University of Alberta. All were identified as conifer. Only one was well enough preserved to be identified as spruce (Picea sp.). Conifer bark was employed as a roofing material.

Clay, reedy plants, and sand were easily found to make chinking. Sandstone outcrops were exploited for chimney stone.

Birch (Betula sp.), the only hardwood in the area, was used for wood to build fur presses and frames for canoes. Birch bark, of course, was the essential lightweight covering for canoes. Stands of birch are irregularly distributed, a fact which is reflected in many journal entries referring to men and horses being sent away from the fort for days at a time to gather birch bark and wood. At Buckingham House birch bark was purchased from the Indians, the traders being eager enough for this commodity to journey to the Indians to pick up their supply. Little wonder, then, at Wm. Tomison's consternation when several rolls of "birchrind", intended for use at Buckingham House, were damaged by "a villain that set fire to the grass where it was lade up" (HBC Archives, B.24/a/1, Reel IM18, Buckingham House Journal, October 21, 1792).

Roots to sew the bark covering on the canoes and pitch to seal the seams were also readily available. Even after the Hudson's Bay Company began building boats at Buckingham House, canoe transportation remained important. Since so many of these fragile crafts were severely damaged by rocks in shoal water on their way inland, the importance of having all the essential material for building and repairing was considerable.

The natural environment of parkland was, on the whole, a benevolent one for the traders. Although rations might run short in a period of poor hunting, the spectre of starvation known in the boreal forest never seems to have stalked posts in the parkland. Building material and fuel were obtainable with relatively little difficulty.

That the fur supply of the area was soon depleted was only the fault of the traders themselves. Uncontrolled competition, with no thought of conserving a breeding population of animals, destroyed large areas for fur-gathering purposes. Two examples will suffice to illustrate the rate at which a region could be depleted of fur. Fort George of the North West Company and Buckingham House of the Hudson's Bay Company were built side by side near the present town of Elk Point in 1792. By 1795 the traders were complaining that the area was no longer producing. They talked of moving to a region to the south, near the present town of Fort Saskatchewan, where beaver were so plentiful that women and children could capture them with clubs. Thus, the first forts Augustus (North West Company) and Edmonton (Hudson's Bay Company) were built in this area near the mouth of the Sturgeon River in 1795. But by 1799 complaints of the paucity of furs coming into these posts were being recorded (Morton, A History of the Canadian West, p. 463).

CHAPTER II

BUCKINGHAM HOUSE AND EDMONTON HOUSE III/TERRE BLANCHE

By 1792 the much-studied competition between the Hudson's Bay Company and the North West Company was well underway. Independent Montrealers first forced the Hudson's Bay Company inland, and the final amalgamation of the Canadians into the North West Company in 1787 added great impetus to the rivalry in the fur-bearing regions between the two companies.

On October 12, 1792, William Tomison arrived at the Moose Hills to build Buckingham House for the Hudson's Bay Company. He followed closely the North West Company's Angus Shaw, who had just completed Fort George only several hundred yards away. The main reason for establishing Buckingham House so close to Fort George seems to have been the necessity to keep up with the competition.

Buckingham House is in the NE $\frac{1}{4}$ of S24 T56 R6 W4, on the north side of the North Saskatchewan, about 300 yards west of Fort George and separated from it by a ravine. That Buckingham House is the western post is now confirmed archaeologically as well as through historical research (Morton, Historical Geography of Western Canada). Considerable confusion was caused when the two sites were reversed on the Vermilion survey sheet number 316--an error that resulted in misidentification of the sites until historical research was initiated following the first season of archaeology in 1965.

In his autobiographical notes John MacDonald of Garth remembered the site of the forts in rather romantic terms.

The new Fort (Fort George) was upon the

margin of a fine hummock of Pine--upon a rising Hill or Bank with the noble Saskatchewan in Front--with Banks in that place of Strong Woods for perhaps a mile in Breadth & twenty in length along the River, as it were a Shelter for the different kinds of Deer, particularly the Moose Deer. (Quoted by Morton in his introduction to the journal of Duncan McGillivray, 1929:xlvi)

Tomison's opinion, recorded on his first arrival at the site, was more practical. The "Hill or Bank" rises approximately one hundred feet in a series of terraces over a distance of about a quarter of a mile--"what makes it inconvenient being far from the river and a very bad bank to ascend" (HBC Archives, B.24/a/1, Reel IM18, Buckingham House Journal, October 12, 1792).

The aspen parkland and its economic importance to the traders has already been discussed at length. Perhaps only one further specific descriptive detail of the site need be added. Buckingham House was built on a deep deposit of rather coarse sand. According to Bulletin 42 of the Soil Survey of Alberta (Wyatt et al, 1944), such deposits are common in this part of northeastern Alberta and are generally water-deposited. While the sandy base might have some advantage in drainage, it did mean the Hudson's Bay Company men had to do their gardening some distance upriver. It also made a neat excavation impossible.

The site has changed somewhat from John MacDonald of Garth's description. Cultivation has opened the area considerably; indeed, only the very northeastern corner of Buckingham House escaped the plow. Conifers are still present, but a good many deciduous trees, including aspen poplar (Populus tremuloides), are now established.

From the relatively complete journals for Buckingham House in

the Hudson's Bay Company Archives it is possible to gain an idea of the personnel at the post. The information presented was obtained by abstracting all pertinent journal references, and since there were often a considerable number, no attempt is made to provide more specific documentation.

The most important position at the post was held by the Factor. The range of duties of this office was partially determined by the individual holding it. Minimum duties included organizing the men; trading with the Indians for furs, provisions, and building materials; "public relations", especially toward other companies; and keeping a written record of all "important" activities, an account which would go first to the Chief Factor at York Factory and then to the Governor and Committee in London. William Tomison, Factor from 1792 to 1794-95, seems to have been more energetic than many other Factors, as he often worked with the men at their duties.

Other roles mentioned in the Buckingham House journals included those of various tradesmen. Of these, the most important was certainly the blacksmith, one Gilbert Laughton. Laughton, as an individual, was probably, like Tomison, somewhat of an exception. His skill and ingenuity as a blacksmith were only two facets of his talents. He was obviously adept at carpentry--from the initial construction of foundations through to finishing work such as making and hanging doors. As a cooper he devised, with Tomison's help, a method of making brandy kegs slightly shorter in order to stretch out the meagre supply of that precious commodity. As an armourer he was a master at repairing the often shoddy guns supplied for the trade. Each spring Laughton undertook the repairing and building of canoes with one or two

assistants. Many of the artifacts found in Buckingham House excavations can be attributed to this man's skills. Nails and spikes, possibly the metal trade points, and very likely most of the scrap metal resulted from his industry. The various gun parts may have been repair pieces, while some of the lead balls may have been made locally in the blacksmith's shop.

A second important skilled man, the tailor, seems to have been kept busy the entire time at his trade. According to the journals, his duty included making clothing for the company's employees and sometimes their families; making clothing for trade; and making the impressive, if not gaudy, suits of clothing presented to Indian "leaders" who brought in good hunts. There is one Buckingham House journal reference (April 1, 1794) to the tailor making a tent for David Thompson. Most tailors' supplies would have been of a highly perishable nature. A look at Appendix VI provides an idea of what was brought inland. Artifacts from excavations which might have been used by a tailor include a needle fragment, buttons, tinkling cones, and the fragments of cloth. However, there is no proof that these artifacts were not trade items used by the servants, or their wives, or came from European clothing made elsewhere.

In 1796 two boat builders were brought to Buckingham House. They too seemed to have been rather singly employed at their trade throughout the winter season. Some of Laughton's nails may have been intended for boat building.

In the first season there may have been two special carpenters in addition to Laughton. If so, they were mainly employed with building construction and making a fur press.

A cooper may have been present in 1797--certainly Tomison

complained of the need for one--but the journal reference (January 2, 1797) is ambiguous.

The number of specialists at Buckingham House was thus quite small. How far this situation can be generalized is uncertain in the light of research done for this thesis. Miss Johnson, in her introduction to the Edmonton House and Cumberland House Journals, 1795-1802 (HBRS, 1967), gives several reasons for a shortage of personnel to man the Hudson's Bay Company's inland posts, so it may be the Buckingham House situation was typical. Fort George may have been better staffed, for in November, 1795, James Swain, then Factor at Buckingham House, obtained the services of a North West Company joiner to make a coffin.

One other category of specialist was usually hired from the Indian population. This was the hunter (or hunters) who was based at a tent camp some distance from the post and responsible for procuring a fresh supply of meat. When sufficient stores were obtained and packed in the ice house, the hunter was dismissed or sent to hunt beaver. Occasionally a hunter would quit to join his kin in a war party, leaving the traders in rather uncertain circumstances.

Most of the men filled a variety of roles. Their duties tended to be seasonal in nature. Initially they arrived in the fall with the canoe loads of goods which they had paddled, towed, and carried from York Fort. At Buckingham House they would be immediately employed carrying cargo into the post and possibly assisting in opening bales of goods. Some might continue on to more distant posts. When a new post was to be established, the immediate task was the collection, preparation and assembly of building materials. This job meant journeys into the countryside for timber and long hours at the pit saw or with a shovel

digging a trench to receive the stockade. Needless to say, the work went on well beyond fall. Before freeze-up it was necessary to bury the canoes in grass-lined pits.

Winter was a time of journeys to and from the hunter's tent to bring in meat, or trips in search of firewood. Additional building supplies might be procured and indoor construction (mainly) undertaken. The necessary ingredients for pemmican, dried beat meat and rendered fat, could be prepared.

Spring was a time for intensive activity. Adequate supplies of pemmican for the journey to York Fort had to be procured. Sometimes the men made up as much as 1000 pounds in one day. Canoes had to be repaired and built, a task which usually involved all the men for some time in gathering bark, pitch, wood, etc., and a few men nearly constantly assembling the craft. In later years at Buckingham House more activity was directed to making boats. Winter hunts would be coming in. These furs, with what had been accumulated in the winter, had to be packed in bales. More than once the fur press broke in the middle of this activity. There was the ice house to supply with ice. Somewhere time was found to plant a garden. Finally, over several days, boats were loaded and dispatched for the journey east.

Summer activities were curtailed by the small numbers of men who could be spared to stay inland. In the summer of 1797 Buckingham House was not even open. Those left inland tended gardens, collected and prepared material for building and canoe work, made necessary repairs to the post's structures, cut firewood for the winter, indeed any of a number of tasks to prepare for the next trading season.

In any season the men were on call to journey by canoe,

horseback or sledge, as befitted the seasons, to take goods or messages to other posts. If required, they ferried Indians back and forth across the river to trade or journeyed to the encampments to trade. When large groups of Indians were in or near the post, the men were kept busy guarding the trading room to prevent mischief. They also guarded their horses, especially when the Assiniboine were about.

There were always one or two men assisting the tradesmen. This was an opportunity to gain special skills which were an avenue, in the Hudson's Bay Company at least, for advancement.

Illness might bring respite from duty, but one mildly ailing individual spent a good part of a winter inside picking oakum to caulk boats. He recovered.

What the servants of the company did in their spare time merits almost no attention in the journals. Sundays and Christmas day were free. A very rare occasion--a party--was held at Buckingham House with the Fort George servants in attendance to "commemorate" the services of the latter in extinguishing a fire at Buckingham House (McGillivray, 1929:66). Archaeological evidence is limited in this respect. Pipes are the only tangible evidence for leisure activity. A few journal references and the presence of women's fleshing tools at the site indicate the men did have families with which to relax.

Buckingham House attracted trade from a wide area. Indian groups specifically mentioned in the post journals are from far out on the plains as well as in the surrounding parkland area. Indians from the former area traded some furs--a few beaver, many wolves, foxes, the occasional badger, and "sundry furs". Their main commodity for barter, however, consisted of quantities of provisions which most often was

dried "beat" meat from which pemmican could be made. Plains Indians coming in to trade included Peigan ("Muddy River Indians" or "Pehannow"), Blackfoot, Blood, Gros Ventres ("Falls Indians"), Sarcees ("Sussues") and Assiniboines ("Assinuepoiet" or "Stone"). By the end of the 1795-96 season most of these groups, with the exception of the Blackfoot and some Assiniboines, were attracted to the Hudson's Bay Company's new post, Edmonton House I, built in 1795 near Fort Saskatchewan.

From the north and west, and the area currently called Elk Island Park, came groups with a more valuable trade in furs. Mainly these Indians were Cree, referred to as "Southerd" or "Southward" Indians by the Hudson's Bay Company men. Some Assiniboine referred to as "Swampy Ground Stone Indians" were from the same general area. Saulteaux ("Bungee") and Mohawk ("Mowhawk") Indians who had followed the fur trade west also were gathering furs in the Parkland area. There is one journal reference to "Towow" Indians (?) and one reference to a Canadian man coming to Buckingham House to trade furs. In addition to furs, apparently some birchrind, wolf pelts, and provisions were traded by the Cree.

With the Indians from the surrounding fur-rich area there was little trouble, but the plains Indians were a source of anxiety to the traders. Perhaps because they were war-like in nature, perhaps because they felt disadvantaged in trade, not having access to the most valuable furs, these Indians managed to worry the traders to the extent that the Hudson's Bay Company men spent six weeks at Fort George in the fall of 1794 in fear of an attack (McGillivray, 1929:29, 65). According to McGillivray, Indians from the Plains need not have looked to the traders

for means of subsistence, but instead desired luxury items, liquor, tobacco, and ammunition which would give them superiority over other tribes (1929:64).

During the occupation of Buckingham House, relationships between the Hudson's Bay Company and North West Company generally were cordial enough. When necessary, the small Buckingham House unit of men sought shelter at Fort George, borrowed gun flints to equip hunters, obtained the services of a joiner, and received aid in putting out a roof fire. On the latter occasion Tomison invited the North Westers for an evening of hospitality at Buckingham House following the incident. Occasionally the Factors visited back and forth. There were, of course, disputes such as the one John MacDonald of Garth remembered over the use of a well dug in the ravine by the Hudson's Bay Company.

Some aspects of the relationship between the trader and Indian customer have been discussed. Many writers, including some actually involved in the trade, have pointed out the dependence on European goods the Indians soon came to experience. Duncan McGillivray felt the Indians about Fort George and Buckingham House to be "attached to our commodities", especially luxury goods (1929:64). Daniel Williams Harmon, writing in 1802 of the Indians on the Swan River in Manitoba, felt the degree of dependence to be extreme:

The Indians in this quarter have been so long accustomed to use European goods, that it would be with difficulty that they could now obtain a livelihood, without them. Especially do they need firearms, with which to kill their game, and axes, kettles, knives, &c. They have almost lost the use of bows and arrows; and they would find it nearly impossible to cut their wood with implements, made of stone or bone. (1957:65-66).

Indian dependence is but one side of the story. In many respects the traders were very dependent on the Indians. Ultimately they were dependent on the Indians to provide them with basic provisions and with furs to sell in England. The relatively small complements of men at inland posts did not have sufficient time to carry out both of these functions. By withholding furs or provisions, as was done at Edmonton House I in 1797-98, the Indians could seriously disadvantage traders.

Measures adopted by the traders indicate they recognized the necessity of maintaining their customers' good will. Exchange of gifts before trading commenced, the traders giving liquor, vermilion, tobacco, etc., the Indians contributing some furs, has the appearance of being an adaptation of Indian custom. The extension of credit was necessary, although the traders might have wished for more effective means of preventing Indians from running up bills in one establishment and then using the hunt that should have been payment to buy goods at the opposition's house. There was even a system of rewards to provide incentive to bring in a good trade. To the leader of a band bringing in a good hunt a trader would give various symbols of headship including a coat, a tall befeathered hat, and a flag. "Chiefs whose bands had been indolent and had not hunted and were not able to pay their credits were deprived of their position by withholding these symbols of office" (McGillivray, 1929:74). It would be interesting to know if the leaders recognized by the traders would have been chosen by their own people and for what reasons.

And there were the Indian wives of the traders. One might speculate on the value of "marital" ties between traders and Indians in

establishing some loyalty to a company. Whether loyalty was established or not, the Indian women (to whom the fragments of bone fleshing tools found in cellars at Buckingham House and Edmonton House III are presumed to belong) and families of the traders apparently were of considerable importance to the conduct of the trade. The answer to a query by the Governor and Committee concerning the amounts of goods supplied to "superior Servants" and presumably their families illustrates how important the women were.

... we wish to remark that the women are deserving of some encouragement and indulgence from your Honors, they clean and put into a state of preservation all Beavr. and Otter skins brought by the Indians undried and in bad Condition. They prepare Line for Snow shoes and knit them also without which your Honors servants could not give efficient opposition to the Canadian traders they make Leather shoes for the men who are obliged to travel about in search of Indians and furs and are usefull in a variety of other instances, in short they are Virtually your Honors Servants and as such we hope you will consider them. (HBRS, 1967: xcix-c)

Buckingham House was abandoned in May, 1800. The house built to replace it was on an island, hence named "Island House", about fifteen miles upstream. In 1800-1801 Island House "fulfilled the role formerly served by Buckingham House and supplied Provisions to the post of Green Lake situate (sic) to the northward" (letter to Dr. J. B. Tyrell from R. L. Gower, February 3, 1937, in Morton, Historical Geography of Western Canada). Again the reason for the move is unclear, but likely was related to the necessity to keep watch on the North West Company, who had just abandoned Fort George. The North West Company, according to John MacDonald of Garth (in HBRS, 1967:lxxxiv), built their new post

some twenty miles upriver, also on an island, to be safer from enemies. Presumably he meant the Plains Indians. Despite the discrepancy between these two references, the two posts were located along with one operated by the XY Co. on Fort Island, which is marked by an Alberta historic site monument. By 1800 new Montreal firms had entered the Saskatchewan. Johnson mentions the combined Forsyth, Richardson, and Leith Jamieson firms (the XY Co.), plus the firm of Parker, Gerrard, and Ogilvy (HBRS, 1967:lxvi). The policy undertaken by the North West Company and followed by the Hudson's Bay Company was to expand their numbers of posts, an action which would force the new companies to do likewise to remain in competition, but would also over-extend their resources. The outposts established by the North West Company and Hudson's Bay Company (Nelson House) in the vicinity of the mouth of Wabamun Creek were built with precisely this aim. At the height of this building spree the Hudson's Bay Company had five posts in operation on the Saskatchewan in what is now Alberta: Acton House (near Rocky Mountain House), Nelson House, Edmonton House, Summerberry River House (on Pembina River), and Island House (HBRS, 1967:lxxxii). For the North West Company and Hudson's Bay Company the policy was a success. By 1804 the new firms were absorbed by the North West Company.

The return to two competitors permitted a reduction in the number of posts operated. In line with this trend in 1810 the North West Company abandoned Fort Augustus II (at the site of the present Edmonton power plant) and Fort Vermilion at the mouth of the Vermilion River, and built one post about two miles upstream from the mouth of the White Earth Creek in the region of present-day Smoky Lake. The Hudson's Bay Company followed the same plan, closing their forts Edmonton House

II and Paint River House at the same locations, and coming to White Earth Creek to build within a common stockade with the North West Company. This establishment was Lower Terre Blanche to the North West traders and Edmonton House III to the Hudson's Bay traders. Today the site is commonly known as Fort White Earth.

Economic factors were important in this move. Operating costs were cut by having only one post. In addition the new site selected boasted "a pine hummock in the edge of the river" (Coues, 1897:586), a situation which meant easily accessible building material. But more importantly, the move was part of a reorganization plan to avert the dangers involved when hostile groups of Indians met at a post. In brief, the intention of the traders was to separate the Cree and Assiniboine, essentially parkland dwellers, from the Blackfoot, Blood, Peigan, Sarcees, and Gros Ventres, essentially plains Indians, and thus prevent "a great deal of trouble and anxiety". To do this, Terre Blanche/Edmonton House III was established to trade with Plains Indians, particularly the Blackfeet, and plans were made to establish a number of outposts further downstream to accommodate the various Cree and Assiniboine groups (Coues, 1897:584).

Edmonton House III/Terre Blanche was constructed on a broad river flat on the north side of the North Saskatchewan River approximately one and one-half miles up from its confluence with the White Earth River in the SE $\frac{1}{4}$ of S1 T58 R16 W4. The flat is now almost entirely under cultivation, but apparently at time of initial breaking fifty to sixty years ago it supported a grassy vegetation with poplar in the swales. This description appears to be confirmed by the chernozem soils typical of the site itself.

The flat is backed by an oxbow lake fed by springs which flow year round. The site is located on one of the highest points on the flat about midway between the river and the lake, or approximately 500 yards from each. Remnants of three higher terraces are located both up- and downstream on the same side of the river, all of which have been largely cleared and put into agricultural production. All probably supported mixed aspen-grassland vegetation, with some spruce in the most sheltered locations. A considerable amount of lithic material was found on all terraces. Quartzite flakes, cores, choppers, etc. were picked up by the archaeological crew. Mr. Chetek, the original owner of the land, had found two large convex-based corner-notched points of quartzite while working the third terrace. Unfortunately, there is no way to correlate the lithic and historic material.

A similar regime exists along the south bank of the river on the higher terraces. The lowest level there, however, is very different in character, supporting a heavy stand of spruce. A layer of sandstone outcrops along that shore, dipping towards the west, reaching the river level a little more than a mile upstream from the site. Some exposures are present along the north shore as well at that point. Evidence of quarrying activity was found on the south bank in a location which agrees well with one noted by Henry (Coues, 1897:606) "... about a mile up the S. side of the river, only 100 yards from the water's edge, ... any quantity (of stone) may be had". The source is thus in the NE $\frac{1}{4}$ S27 T58 R16 W4.

South of the river channel the land is primarily aspen parkland. Several small lakes are present within easy distance from the post. Henry reported that near a small lake, about two miles from the

post, there was a plentiful supply of white clay suitable for covering buildings (Coues, 1897:605). Surveys in 1968 failed to locate this lake.

Life at Edmonton House III involved much the same division of labour following much the same routine as at Buckingham House. The Factor, James Bird, may not have had the energy of a William Tomison, and he certainly may have had more interest in material comforts, judging by the variety of china ware and the monogrammed ("J.B.") silver spoon recovered in excavations.

On the whole relationships with the North West Company were amiable. There were disagreements about trading furs from an individual indebted to the North West Company, but there were also cooperative dances.

There was some uneasiness about the possibility of Indian hostility in the initial stages of occupation. Indeed in September, 1810, there was an encounter between three Assiniboines and two Sarcees. Henry reports "... we hurried the Sarcees up to the house, and the Assiniboines over the river. Thus ended an affair which might have been attended with disagreeable consequences" (Coues, 1897:625).

In May, 1813, the post was abandoned. The reason seems to have been poor trade. Upon arriving at Edmonton House III in September of 1812 and finding few furs or provisions as a result of very little trade during the summer, James Bird wrote "... the situation of this Factory proves to be so inconvenient that I intend building a new one in the neighbourhood of Edmonton House" (HBC Archives, B.60/a/10, Reel IM49, Edmonton Post Journal, September 21, 1812).

The remainder of the thesis presents the archaeological

information gained from excavations at Buckingham House and Edmonton House III. Chapter III deals with the layout of the forts and the construction methods employed. The artifacts found are analyzed in Appendices I and II, and the faunal and vegetal remains recovered and identified are presented in Appendices III and IV. Two lists of goods and supplies destined for the inland posts are included as Appendix VI, with the idea of allowing the reader to compare the contents of these lists with what was found archaeologically. The comparison will provide but another example of the complementary nature of historical and archaeological studies. Chapter IV is an attempt to bring together information recovered in excavations at several sites on the North Saskatchewan River and to develop a list of traits indicative of a particular company and/or period of time. With a great deal of refinement, such a "regional trait list" should be helpful in identifying undocumented sites containing European goods.

CHAPTER III

CONSTRUCTION

Sites at which permanent structures were erected hold considerable potential data relating to construction projects, methods, and materials. The present chapter sets forth the data on construction realized from archaeological and documentary research of Buckingham House and Fort White Earth. As will be indicated, there are still many unsolved problems relating to the construction of these establishments. Some suggestions are made as to how some of these enigmas can be solved archaeologically.

For the present sites both archaeological and historical documentation of construction are quite unequal. For Buckingham House William Tomison and his successors left a relatively good record of what was built, what repair was necessary, and some hints as to what methods were used. Unfortunately, some of the hints, such as his reference to sleepers, are ambiguous.* It is fortunate that the documents are useful, as the archaeological test was insufficient to provide a very complete interpretation of the number and type of constructions at the site.

There is no information in the Edmonton House post journals of 1810-1813 concerning the construction of Fort White Earth. Probably the

*The account of the building of the first Fort Edmonton in 1795 by Tomison and many of the same men as in 1800, especially blacksmith Gilbert Laughton, is very similar to the account given for Buckingham House, with the exception that logs for construction were readily available at the latter post. The Edmonton House I post journals have been published and are available as Volume XXVI of the Hudson's Bay Record Society, 1967.

main reason is that the post journal for this fort does not start, to the best of my knowledge, until September 2, 1810, although contemporary North West Company journals indicate Hudson's Bay Company people were there throughout the summer. The journal kept by Alexander Henry, the North West Company Factor, indicates that a good deal of the construction was carried out between early June and September of 1810. Fortunately, the archaeological record of construction at White Earth, as far as it goes, is good.

In the following discussions of construction at Buckingham House and Fort White Earth the defensive structures are first considered and then the interior structures. At Fort White Earth interior structures were excavated only in the smaller eastern area of the post occupied by the Hudson's Bay Company. There is ample evidence that the Hudson's Bay Company was located in this part of the fort. Three clues are contained in Henry's journal. He indicates that the bastion at the southwest corner of the post was not only built by North West Company men, but used to store North West Company goods (Coues, 1897:604). Secondly, the "Indian House" of the North West Company was 70 x 20 feet (Coues, 1897:616). Surface features 79, 80, 82, 83 and 86 appear to indicate a structure which matches these dimensions. A third clue is contained in the number of people belonging to the two companies. On June 3, 1810, there were 135 North West men, women and children, as opposed to 85 Hudson's Bay Company "people" (Coues, 1897:603). Thus one might expect, as it turned out, that the Hudson's Bay Company would have occupied the smaller section of the post.*

*These figures may be somewhat misleading, however, as they

Artifacts recovered in excavations confirmed the documentary evidence. Ten pewter buttons bearing the Hudson's Bay Company motto, fox, and initials, plus a silver spoon with the initials "J.B." (James Bird?) engraved in ornate script, were found in situ in the building features. The lack of any true Chinese porcelain constitutes negative evidence, as such ceramics were imported only by the North West Company. While these artifacts are all highly transportable, one must assume their archaeological context to be representative of the role that they played in the ongoing life at the fort.

In recognition of the extensive journal material available for Buckingham House, the archaeological and documentary data have mainly been kept separate to avoid confusion. The few references from Henry's journal which pertain to construction at Fort White Earth (or Edmonton House III) have been incorporated with the discussion of archaeological findings.

Construction at Buckingham House

Defensive structures: According to the Buckingham House post journals, there were two main periods of stockade building. The first was between November 7 and December 19, 1792, a period in which a palisade, complete with a north gate and at least one other of unspecified location, was erected. As indicated below, the archaeological

represent only the summer complement of people at the fort. On December 14, 1810, Factor James Bird states "... we are 166 mouths" (HBC Archives, B.60/a/9, Reel IM49). It is assumed he is referring to the numbers in the Hudson's Bay Company post. Because bison did not come close to the post that winter, many Hudson's Bay Company families were sent "downwards" to live on buffalo. On January 20, 1811, Bird mentions 100 people at the post (HBC Archives, B.60/a/9, Reel IM49).

evidence suggests the original palisade was slightly larger than the 100 feet square recorded by Tomison.

The journals indicate that the stockade posts were barked, pointed, attached to sawn ribbons, and then set into trenches, presumably in sections of manageable length. How long the posts were is not recorded. At Fort Carlton, where the height of the palisade was known, a ratio of one to six was found to exist between the length of the post below ground and length above (J. S. Nicks, personal communication). The few posts excavated at Buckingham House indicate that the length below ground was about $2\frac{1}{2}$ feet. On the basis of the Carlton ratio, this figure would indicate a palisade standing $12\frac{1}{2}$ feet above the ground. Neither the journals nor the amount of excavation done suggests that any substantial bracing, other than the trench, was used.

It is of interest to note that initial construction of the palisade did not start until the exterior of the trading house was completed--a task requiring the twenty-seven days immediately after arrival at the site.

The second period of stockade building began with May of 1793 and stretched through a year to the latter part of April, 1794. Work of collecting stockades from the surrounding countryside and sawing ribbons was carried on intermittently, probably when there were no other pressing duties. Some stockades were erected during the summer of 1793, but most seem to have been stockpiled. From late January to early March of 1794 the men concentrated on "barking" or shaving the stockade posts. In late March and early April, 1794, stockades were pointed and fitted to ribbons. April was devoted to digging trenches, setting up stockades, and completing gates. Hinges for the gates were made from "Ice chisels

not tradeable" (April 22, 1794). No final size of the enlarged fort is reported. The journals from the spring of 1794 to the fall of 1795 have not survived, and it was probably within this period that the stockade was completed.

Extensive upkeep of the palisade does not appear to have been necessary. The entry for December 2, 1796, notes that the smith was making iron work to repair the gates. In June of 1798 some undescribed repairs were made to the stockade.

The final modification of Buckingham House defenses was the construction of a watch house between March and May in 1798. Although many entries refer to cutting, hewing, and sawing logs for the watch house, no record was made of its size or location; nor was archaeological testing extensive enough to reveal traces of this structure.

The archaeological evidence includes the five lines of higher, greener, and thicker vegetation growth presumed to outline the palisade around the fort (see Fig. 2), plus the test excavations extended across these lines. The vegetation lines were marked with stakes in 1965, in the early spring when the vegetation change would be most pronounced.

Dimensions are as follows:

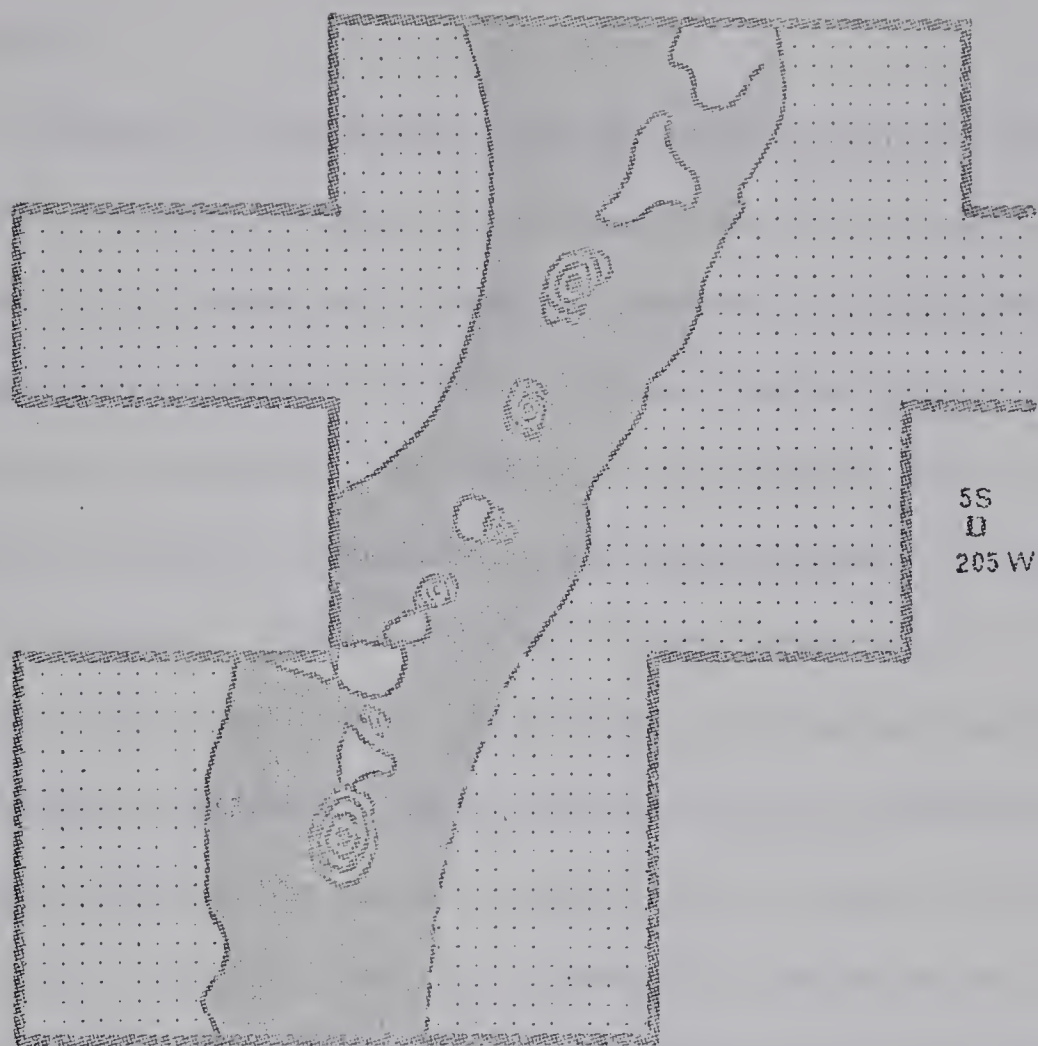
North line:	187 feet
West line:	140 feet
South line:	195 feet
East line:	145 feet
Center line:	143 feet

The measurements indicate that the palisade was not far off the square. Although the location of the four exterior lines has been verified by excavation, their true extent was not. Location and excavation of at least three corners is necessary to confirm the dimensions of the palisade. Present evidence suggests this original

enclosure was made up of parts of the north and east lines, the center line discussed here, and a fourth line, not marked by vegetation change but revealed in excavation. If this is so, the enclosure would have measured 122.4 feet (north) x 122.4 feet (east) x 127.5 feet (south) x 120 feet (west).

The westernmost vegetation line and the excavation which crossed it were designated feature 8 (Fig. 3). Remains of the palisade were encountered under seven to eleven inches of plow zone. Definite remains of six round (?) posts were found. All but two of the posts were in extremely poor condition. The largest post was eight inches in diameter. Six possible post molds were encountered in line with the posts. The palisade trench in this area was two feet wide and up to two feet three inches deeper than the plow zone. Post remains appear centered in the trench rather than against one or the other side. Trench fill consisted of dark grey coarse to fine sand, charcoal, and organic material which stands out in contrast to the coarse orange sand underlying the entire site. A single clenched nail and a scrap of metal were the only artifacts found in the trench fill.

The northern vegetation line and the short section of the northern palisade excavated were designated feature 9. The posts uncovered in the excavation actually lay just outside the dense vegetation line. Remains of three posts were uncovered beneath eight to ten inches of coarse dark brown sand forming the plow zone. One is sufficiently preserved to indicate a round post of about thirteen inches diameter. The palisade trench was two feet nine inches wide and two feet three inches deep below the plow zone. Fill consisted of coarse orange-brown sand which was lighter in color than the surrounding coarse



5S
U
205 W PLOW ZONE 210 W

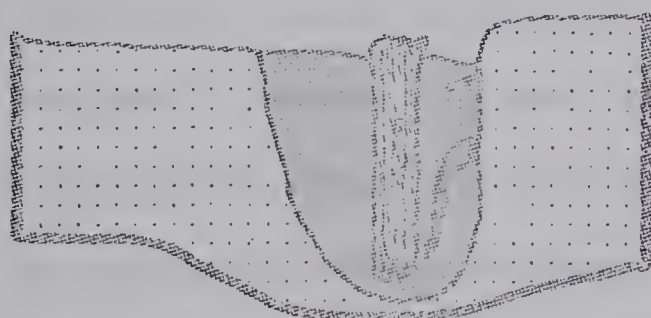
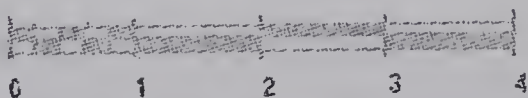
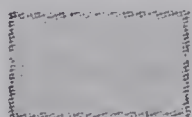


FIG 3:
PLANVIEW AND PROFILE OF PALISADE TRENCH --- FEATURE 8

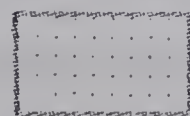
SCALE (in feet)



TRENCH FILL



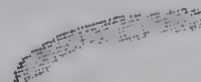
COARSE SAND



POST MOLD



CHARCOAL



orange sand.

Feature 10 consists of the eastern vegetation line and a portion of the east palisade trench encountered along the easternmost test trench. It underlies a shallow depression visible on the surface. The trench was a maximum of two feet three inches wide and extended to more than two feet deep. The bottom of the trench was not cleared, but presumably it would be rounded and slightly narrowed, as were the other trenches excavated. Fill consisted of dark brown sand of medium coarseness, with some coarse orange sand and charcoal inclusions. As with the other palisades, the trench was dug into coarse orange sand. This trench occurred in the only uncultivated corner of the site. From the profile it is clear that the trench fill extended for some distance on either side of the trench to a thickness of six inches over the original ground surface.

The lack of posts in this short section may be interpreted in at least two ways. Either a gap was left in the palisade for a gate, or the posts were pulled out of the trench after the fort was abandoned. There is no direct documentary evidence to support either alternative.

Indications of an east-west palisade trench, designated feature 11, were excavated along the 75 west exploratory trench from 80 to 82 feet south. No posts were found. This feature may well represent the original south wall of the palisade which was removed to enlarge the area within the fort. No profiles were made.

Feature 12 consists of the southernmost palisade, as indicated by a heavy vegetation line, and a trench revealed through excavation. At present about ten inches of plow zone tops the trench, which extends downward for another $23\frac{1}{2}$ inches. Fill consists of charcoal, a fair

amount of ash, and numerous burned bone chips, all mixed with dark brown sand. The bone chips were most prevalent towards the bottom of the trench. A single glass bead was the only artifact found.

Possible evidence for posts occurred some eighteen inches below the surface and included two possible post molds running parallel to the outline of the trench. The larger was five and one-half inches across; the smaller was four inches across. Neither contained any traces of wood.

A single heavy timber, nineteen feet long and one to two feet wide (feature 7 on Fig. 2), was located first on the north wall of the east-west trench at 135 feet 8 inches west. Depth beneath the plowed surface varied between four and nine inches. The timber, charred and extensively gouged or rotted, ran slightly north-northeast of the 135 west line, a location which places it directly in line with a strip of dense vegetation, here designated the central palisade line. Mud plaster was concentrated on top of this timber, but was not scattered any distance on either side.

Interpretation of feature 7 is uncertain. It is really too long to be a believable gate sill, as gates at other sites, for example Fort White Earth, are less than half this length. Perhaps it represents a stockade post thrown into the trench when the palisade was enlarged. The mud chinking may also have been thrown in at this time as fill.

The Trading House: The most important building and the first to be built at Buckingham House was the trading house. Fortunately, the post journals for 1792-93 give a fairly full day by day account of the construction, a description from which a coherent picture of the building emerges. The outside dimensions were 63 x 26 feet. It was a

two storey building, housing within its walls apartments for the men, the trading room, storage for trading goods and furs, and in all probability the Factor's residence.

The first step mentioned in the construction record was that of digging trenches and laying the sleepers. Unfortunately, the term "sleeper" was a general term used to describe any building timber resting directly on the ground, and it is difficult, therefore, to infer the basic method of construction used from such references. About all that can be said with any certainty is that the walls were made of logs.

More details are available concerning the roof construction. Apparently, the initial roof was made of "small sticks" or poles covered over with grass and turf. This roof was replaced the following summer with a more serviceable and permanent one of bark.

The final touches to the exterior came with the placing of windows and doors. The former were made of parchment. While it is recorded that Tomison requested window glass, there is no evidence that it was ever employed at Buckingham House. The doors were made by Gilbert Laughton, the blacksmith, with the help of one of the canoe builders. Laughton not only made the door but undoubtedly the nails which held it together and the hinges from which it hung as well. As "locks for cabbin doors" are listed among goods needed inland in the York Fort indent for 1791, it seems likely imported ones may have been used for the trading house (HBC Archives, A11/117, Reel 189).

The interior of the house was divided by partitions made of hewn timbers. The location of only one is indicated in the journal, and that was in the middle of the house. The floors were made from sawn planking. Somewhere within the house, there was a cellar excavated

while the building was being raised.

Although there is no indication of the number of chimneys, at least two are implied by the use of the plural form of the word in the journals. Stones were employed in the construction of the chimneys.

Frequent references to mudding and plastering the house indicate that the house was plastered and chinked with mud inside and out, a fact confirmed archaeologically. Suitable mud would not have been available right on the building site, but would have been within easy reach of the fort, perhaps near the river.

Most of the other building materials were available close by. Logs for building purposes could have come from thick pine woods directly to the north. Although chimney stones were not available on the site, the journals record that the traders dug for them at a nearby "quarry" and hauled them in to the fort with horses.

In the eight years that the post was occupied maintenance and repairs were frequently necessary in order to keep the house in good condition. Besides almost annual mudding and repointing, the cellar had to be repaired in 1796; there was some major refurbishing of the structure in 1797; and repairs to the roof became necessary in 1798.

In the archaeological record four features appear to be related to a single structure which fits the journal description of the house.

The major structural feature excavated at the site was a cellar--feature 2 (Fig. 4). Prior to excavation, the only surface evidence for the feature was a very slight dip, plus a considerably heavier growth of grass. A local informant recalled that before the ground was cultivated only one shallow depression or "half cellar" was

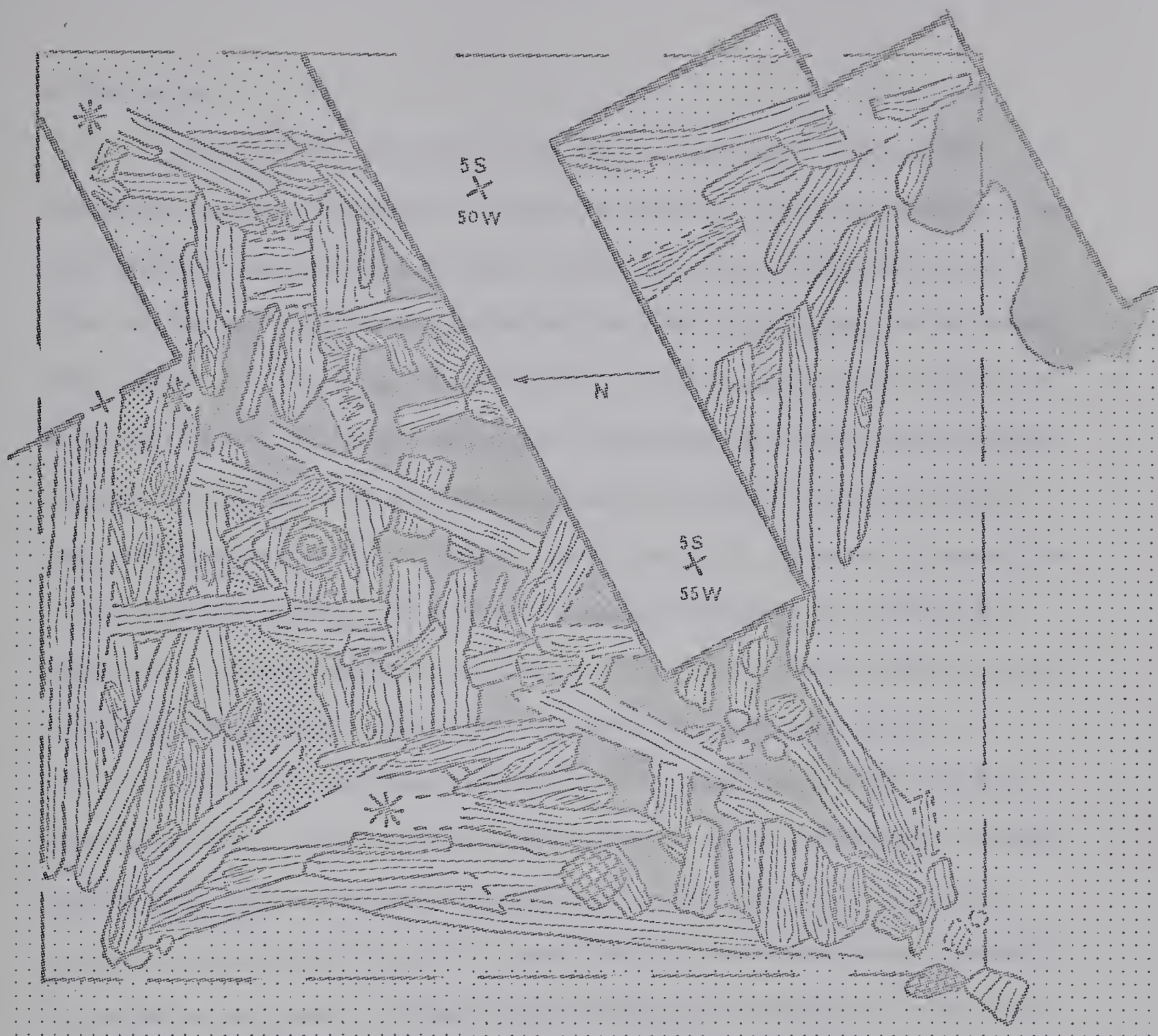


FIG 4: BUCKINGHAM HOUSE: FEATURE 2

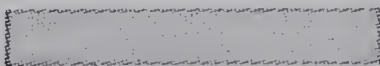
SCALE (in feet)



DISTORTED BY SLUMPING



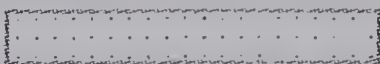
CHARCOAL FRAGMENTS



ROCK



COARSE SAND



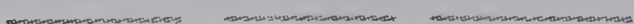
FINE SAND (CELLAR FLOOR)



DIFFERENT LEVELS



PROJECTED CELLAR OUTLINE



LIMITS OF EXCAVATION



on the site.

The cellar was cribbed--an obvious necessity. Original excavation must have caused no little difficulty, as it was accomplished in a coarse, unconsolidated sand. In the main split logs were used, with the peeled round side inward and the flat side facing on the coarse sand. Some full logs may have been used. The lowermost (?) log on the south wall was full round, and there were three full round logs stacked against each other a short distance inside of, and perhaps originally part of, the west wall. The half rounds varied in diameter between four inches and six inches, and the full rounds were about six inches in diameter. All were heavily charred, and the half rounds especially were in fragile condition. Dimensions are thus only approximations.

Only the southwest corner could be excavated, but it was in poor condition. Logs from the south and west walls overlapped, leaving slight gaps at the corner. Although not noted, there may have been notches cut into the logs as in loose sand it would have been necessary to minimize any gaps. Perhaps some chinking was employed to this end, but the only evidence was a small bit in situ on the east wall. No concentration of chinking was found in the lower cellar fill, but it could have gone unrecognized had it disintegrated and been blackened by surrounding charcoal.

Dimensions of the cellar are difficult to establish because of burning and inward collapse of the cribbed walls, plus failure to locate precisely three corners. Avalanching of the sand walls during excavation and mapping added further distortion. In terms of depth the cellar remains were located between one foot six inches and six feet seven inches below the surface. The high points were near the corners--three

feet below the surface at the northwest corner; one foot six inches at the northeast corner; three feet ten inches at the southeast corner; and three feet nine inches at the southwest corner. Planking from the ground floor level was found slanting from four feet one inch to five feet one inch below surface. Planking on the cellar floor was encountered between six feet three inches and six feet seven inches depth. The clay and sand beneath the planking was measured at six feet seven inches depth near the center of the cellar. Projected outline of the cellar is a square between ten and eleven feet per side.

The plank floor of the cellar was laid on a fine light brown sand and clay. Whether this fill was brought in or whether it represents a stratum beneath the coarse orange sand was not established. The planks were six inches wide and one inch thick. Most were laid in an east-west orientation. The planks seem to have been simply laid down rather than nailed in position.

A single upright post was located about three feet in from the north wall and approximately equidistant from the east and west walls. Originally, it was some eight inches square. It was set about two inches into the sand and clay base. Only a short stub when excavated, it likely served as a brace for a north-south beam to support the main floor planking, which ran east to west. A second brace post may well have existed. If it was located three feet in from the south wall, it would be within the unexcavated baulk on the 55 west line. Portions of the collapsed brace and beams may have been present in the rubble, but these were not recognized.

There is no evidence that the fill originated during occupation of the fort. All cribbing and plank flooring was heavily charred,

and the main concentration of disarrayed and burned wood and charcoal were within the lowest two feet of fill. For the entire period of occupation the extant journals make no reference to a fire in any fort structure. It appears, then, that sometime after abandonment in 1800 a fire occurred at the site, perhaps initiated by a grass fire, in which the cellar and its superstructure were gutted. Subsequent fall from the burned building filled at least the lower half of the cellar. Also, some of the orange sand trickled in near the bottom of the weakened and collapsed northwest corner.

The upper three feet of fill in the center (increasingly thinner toward the margins) was a jumble of sand, fire-hardened mud chinking, large and small rocks and small amounts of charcoal, all capped by six to ten inches of plow zone. Such a disoriented mixture suggests the fill was scraped into the pit from the immediately surrounding area, probably in the initial years of cultivation.

Artifacts were concentrated within the lower fill, resulting from collapse of the building. They were quite varied--pipe fragments, glass fragments, wire, corroded metal, an ornate cross, an ice chisel, fork tines, charred rope, pieces of barrel hoop, tiny pieces of cloth, beads, etc. A concentration of nails, now badly corroded, came from the center of the cellar in the ash, sand, and charcoal on the bottom; they may have been stored in a container, but no evidence remained.

Outside of the cellar there were three other features believed to be associated with the trading house. In extending the east-west exploratory trench two charred timbers were encountered and designated features 5 and 6 (see Fig. 2). These may have been sleepers or foundation timbers. The post journal of 1792 indicates that on November

3 the outside of the trading house was finished--"63 foot long and 26 wide". By projecting lines along the two timbers mentioned, it was found that they were parallel and 26 feet apart. They are slightly less than 63 feet apart along these lines. By completing a 26 foot by 63 foot rectangle, placing one corner at the westernmost timber, feature 2 is found to lie directly in the center of the rectangle.

Further evidence for the overlying structure occurred about ten feet to the west of the cellar. Here there was a complex of charred wood, mud plaster, and rocks. This feature (4) had obviously been truncated by cultivation and probably jumbled as well. Interpretation is only guesswork. There was a concentration of rock, some of it a thick, smooth slab of sandstone; perhaps it was part of a fireplace. One actual post and two possible post molds were located in association with a concentration of mud plaster and a charred and fragmented horizontal (?) timber.

A single heavily charred timber, running obliquely across the east-west trench between 24 and 28 feet west, was designated feature 5. Maximum dimensions were not obtained.

Feature 6 consists of a short length of charred timber between 97 and 98 feet west along the east-west trench. The southeastern extent of the timber was not determined. As shown in Fig. 2, feature 5 and 6 are along parallel lines 26 feet apart. They may be sleepers or foundation timbers from the trading house, as discussed under feature 2 above.

Other Documented Construction at Buckingham House: Other constructions are mentioned in the post journals, but were not located in excavations. Most should be located with further archaeological work.

Several buildings were erected in addition to the trading house and watch house mentioned above. In the first fall a provision house and a smith's shop were erected. The former was thatched and had a (plank?) floor. It may be the same structure that in later years was called a "victual shed", which was used as an ice house to preserve fresh meat. The smith's shop boasted a forge, bellows, "vyce", and possibly a carpenter's bench, although the location of the latter was not indicated. That first fall, too, a number of men's cabins were built, but little is recorded of them except that the doors were hung with hinges made from ice chisels by the blacksmith. A tent for the men to cook in was erected, but probably its location would be difficult to recognize archaeologically. One reference is made to an outhouse which was covered with bark in 1793. It may have referred to one of the above buildings.

Excavations by the traders included a pit saw, a pit for making charcoal, two wells which were fenced in, at least one other cellar, and canoe pits which also were fenced.

Somewhere within the fort, a flagstaff was erected--62 feet above ground and 6 feet below. Possibly one of the five "Union flag large No. 1 with 10 foot hoist" listed among the goods sent inland in the York Fort Indent for 1791 flew from this huge post (HBC Archives, A11/117, Reel 189).

Gardens, too, were tended by the traders. At least one area was "below the bank" and upriver a short distance. Mention is made of using horses to bring in black soil to make a garden for sowing Orkney cabbage seed. This nostalgic garden may have been nearer to the fort.

Finally, the graves of three of the company's servants are

somewhere in the vicinity of the fort. At least one of these was surrounded with a stockade.

Miscellaneous Excavated Features: Three features encountered in excavations have no complementary journal references.

Feature 1 (Fig. 2). This was a shallow refuse-filled trench about eight feet long and eighteen inches wide. It was encountered nine and one-half inches below the surface. The bottom of the pit occurred at eleven inches below ON10W, suggesting an overall thickness of about two and one-half to three inches for the deposit. Fill consisted of ash, charcoal burned bone, fine sand, and many artifacts.

That the trench was contemporaneous with the fort was well demonstrated by the artifacts it contained. Beads, buttons, one complete pipe bowl, many pipe stems, stoneware sherds, melted bottles and glass fragments all fit a fur-trade occupation. Part of a stemmed quartzite projectile point was found within the trench as well, but this find does not necessarily indicate that such artifacts were being manufactured between 1792 and 1800. The point could have been introduced in digging or covering the trench, as the coarse sand surrounding feature 1 is liberally sprinkled with aboriginal lithic material. A fort occupant likewise could have picked the point from off the ground and tossed it into the ash pit.

Feature 3 (Fig. 2). A small shallow fire hearth, about twenty inches by thirty inches, was located some six inches under the surface in the northeastern corner of the site. Other than charcoal, the hearth contained several cobbles and smaller rocks. The coarse orange-brown sand immediately surrounding the hearth contained a heavy concentration of chipping detritus. There were no historic artifacts associated with

this feature, a fact which raises the possibility that it may have been associated with the lithic assemblage.

Feature 13 (Fig. 2). Feature 13 was a small open circular pit. Originally, it was designated depression 2 to distinguish it as an obvious surface feature. It measured ten by eleven feet. The deepest part of the pit was some two feet below the surface. The east-west trench was extended through feature 13, but no artifacts or evidence of structure were located; hence it is not possible to determine if this depression was contemporaneous with the post or much more recent. The lack of artifacts suggests this was not the "half cellar" reported by the local informant, as he specifically recalled collecting pipe stem fragments within the cellar.

Construction at Fort White Earth

Defensive Works: It was readily ascertained archaeologically that both companies built within a common stockade, with a median wall separating them. There was no evidence of any special defensive structure at the northwest corner, but there was good evidence for bastions at the northeast and southwest corners. Four gates were excavated, two into the North West Company post, one in the Hudson's Bay Company post, and one in the median wall.

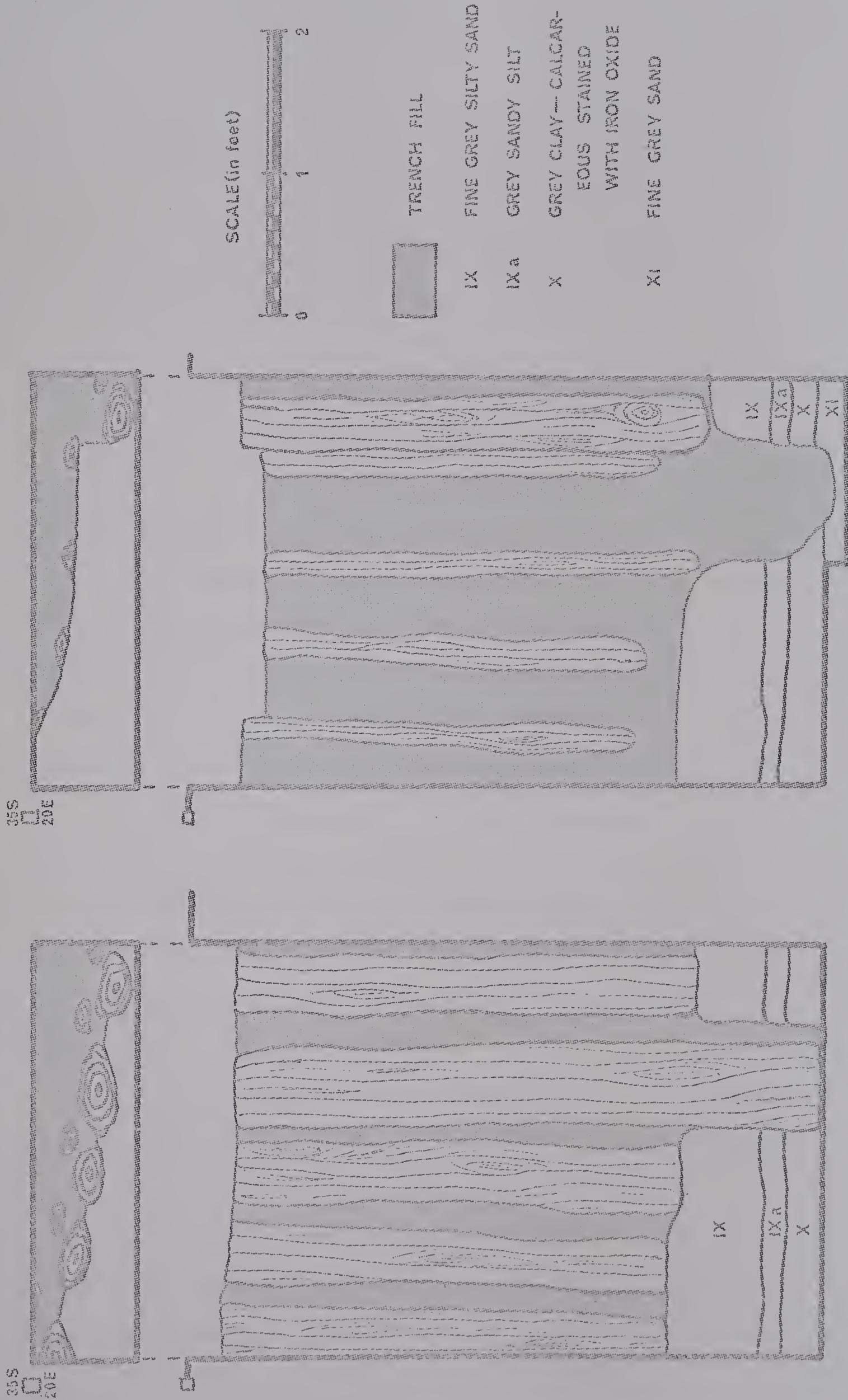
Stockade (Fig. 6): The stockade apparently formed an almost perfect rectangle 472 feet long and 169 feet wide (external measurement). The interior angles at the three excavated corners were all close to 90°. Only the northwest corner varied more than a degree from being a right angle. The deviation at this corner to an angle of 91.5° is probably due to the very pronounced dip in the surface at that point.

Plan view sections of all four walls of the stockade were exposed and mapped. Deep sections--both lateral and transverse--along the north, east and south walls revealed considerable detail about the stockade substructure.

The stockade was essentially uniform in structure and form in all areas tested. In plan view it could be seen that a double row of posts had been used (Fig. 7). The outer row was noticeably larger and more uniform in placement, the inner smaller and in places quite spotty. The two rows were apparently staggered, with the inner one placed so as to fill in gaps between individual pickets in the outer row. The pickets were placed against the outer wall of a trench containing a mottled fill of sands, clay, silt, and dark organic materials. In some places there were concentrations of bone included in the fill; in others short lengths of timber had been thrown in as well. The trench varied in width from 1.2 feet to almost 1.9 feet. The variation does not appear to have had any correlation with cultural factors--the narrowest and widest measurements came from the north stockade of the western post.

One variation thought possibly to be significant was noticed in the form of the pickets. In sections excavated along the north, west and south walls near the western end of the compound it was observed that the posts were roughly circular. Sections exposed towards the eastern end of the compound revealed posts which were lens-like or, more commonly, lunate in cross-section, with the convex side on the inside. Deep sections revealed that this form was due to lateral compression of the pickets as the trench fill settled and the wood lost its strength. Even where the timbers appeared most definitely lunate, at greater depth they invariably proved to be fully rounded.

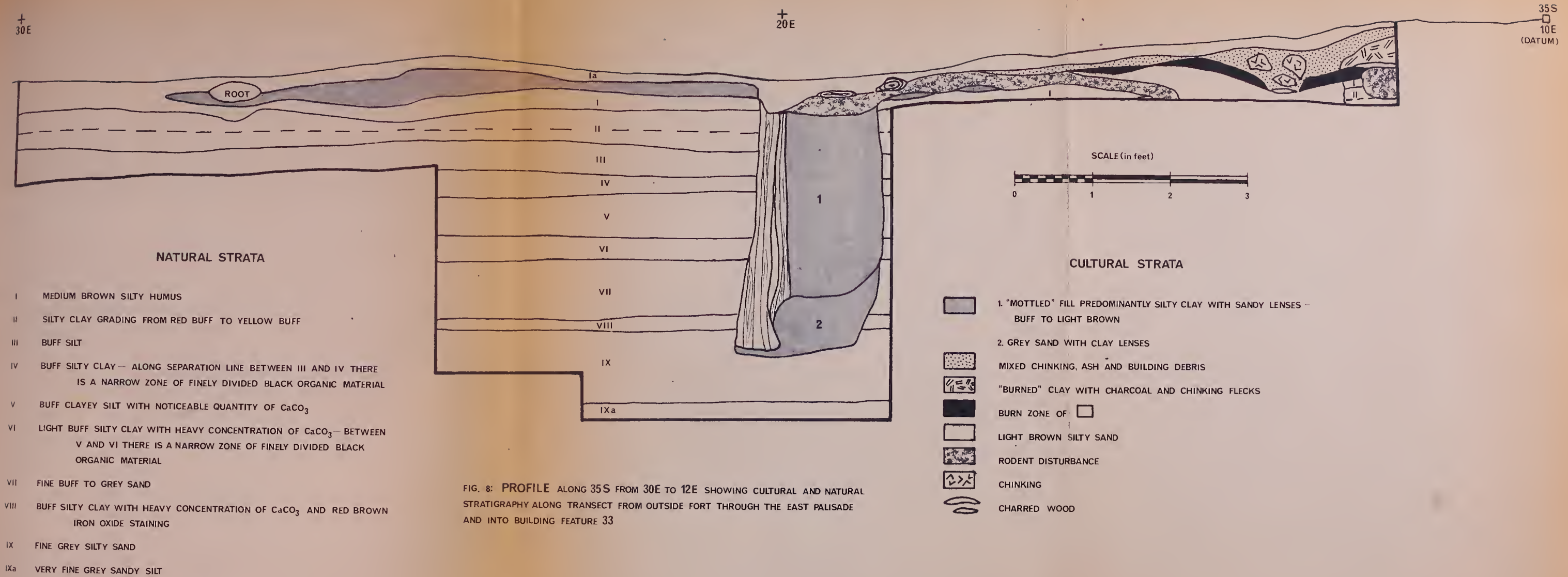
FIG 7: PLANVIEW AND PROFILE OF EAST STOCKADE SECTION---FEATURE 31



It has been found that the correlation between the cross-sectional shape of the pickets and their relationship to either the east or west post was not as good as it first appeared. It is probable that variation is related rather to the depth to which the stockade was exposed when the plan views were taken, and this feature was largely related to the depth of destruction by erosion and cultivation, as all plan views were taken at the highest possible level. As the western end of the site is higher than the eastern, more of the surface has been lost due to erosion and downgrading through cultivation. For this reason it is to be expected that features in that area should be disturbed to a greater depth. Most sections exposed towards the eastern end of the site were in undisturbed condition or had been protected through being in a depositional, rather than an erosional, position.

The best evidence for stockade substructure came from a deep section excavated along the east wall in an undisturbed portion of the site (Figs. 7 and 8). At this point the stockade was buried beneath 0.2 to 0.3 feet of humus. The stockade was placed in a trench approximately 3.4 feet deep and 1.6 feet wide. Backdirt from its excavation had been thrown to both sides and remained on the outside to a maximum depth of 0.4 feet to a distance of almost 8 feet in that direction (Fig. 8). Only a small amount of fill remained inside.

The pickets were placed in two staggered rows of very different character. The outer one was clearly the major one. Its posts measured from 0.4 to 0.45 feet in diameter and were sunk to the bottom of the trench, some 3.3 to 3.5 feet below the original surface. Using the ratio of 1 to 6 for estimating the height of the stockade from the portion remaining underground, the east wall of the White Earth palisade,



at least, was between 16.5 and 17.5 feet high.

One of the posts was considerably higher, 0.6 feet in diameter, and placed in a specially-deepened section of the trench to a depth of approximately 4.3 feet below the original surface. Evidence of another "anchor" post was uncovered in a deep section excavated at the junction of the south and median walls. Further excavation would be required, however, to determine how regularly and at what intervals such anchor posts were employed. At Fort Carlton they were employed approximately every 12 feet and were paired with gallery support posts located about four feet inside the wall (A. J. Ranere, n.d.). No evidence of gallery support posts was found at White Earth, but the possibility of their existence cannot be entirely discounted.

The inner row of posts was much less substantial, consisting of nothing more than pickets 0.2 to 0.25 feet in diameter set in a staggered relationship to the main row of posts, thus filling in any gaps which might exist between them. They were sunk to the slightly shallower depth of 2.9 to 3.3 feet below the original surface.

Bastions: Three of the four corners of the main stockade were excavated. At two there was evidence for special defensive works which probably took the shape of bastions. At the third, the northwest corner, there was nothing more than a simple corner with an extra-heavy post ca. 0.5 feet in diameter occupying its apex.

The southwest bastion, feature 29, had been the first structure completed by the North West Company in the summer of 1810 (Coues, 1897:604). In it they had stored all their trade goods and other articles they wished to protect against the weather. Concrete remains of this feature were sparse indeed, and in some respects

puzzling (Fig. 9). It was to be expected that most of the super-structure should be missing, as this area had been under cultivation for many years. In addition it is the highest point within the vicinity of the fort and could be expected to have lost a considerable amount of soil due to erosion and the downgrading effects of long continued tillage. Such, indeed, was the case. With two exceptions, only earth fill lines and posts remained.

The west palisade ended approximately 3.5 feet north of the projected point of intersection with the south wall. Similarly, the south palisade ended almost 6.5 feet east of the same point. This gap was presumably filled by the reported bastion. Initially, only two pieces of direct evidence for the bastion could be seen. Approximately three feet north of the west end of the south stockade was the butt end of a heavy round post approximately 1.2 feet in diameter and set in a mottled clay trench fill. In line with it there was a small segment of horizontal timber lying in the trench fill just south of the most southerly post in the west wall and lying at right angles to that wall. Presumably, it had been preserved because compaction of the trench fill beneath brought it below plow depth. The excavation was then extended to attempt to locate an hypothesized northwest corner post for the bastion. Such a post was located approximately 8.5 feet west of the west wall. The outer corners were found to lie outside the fenced area, but were later excavated.

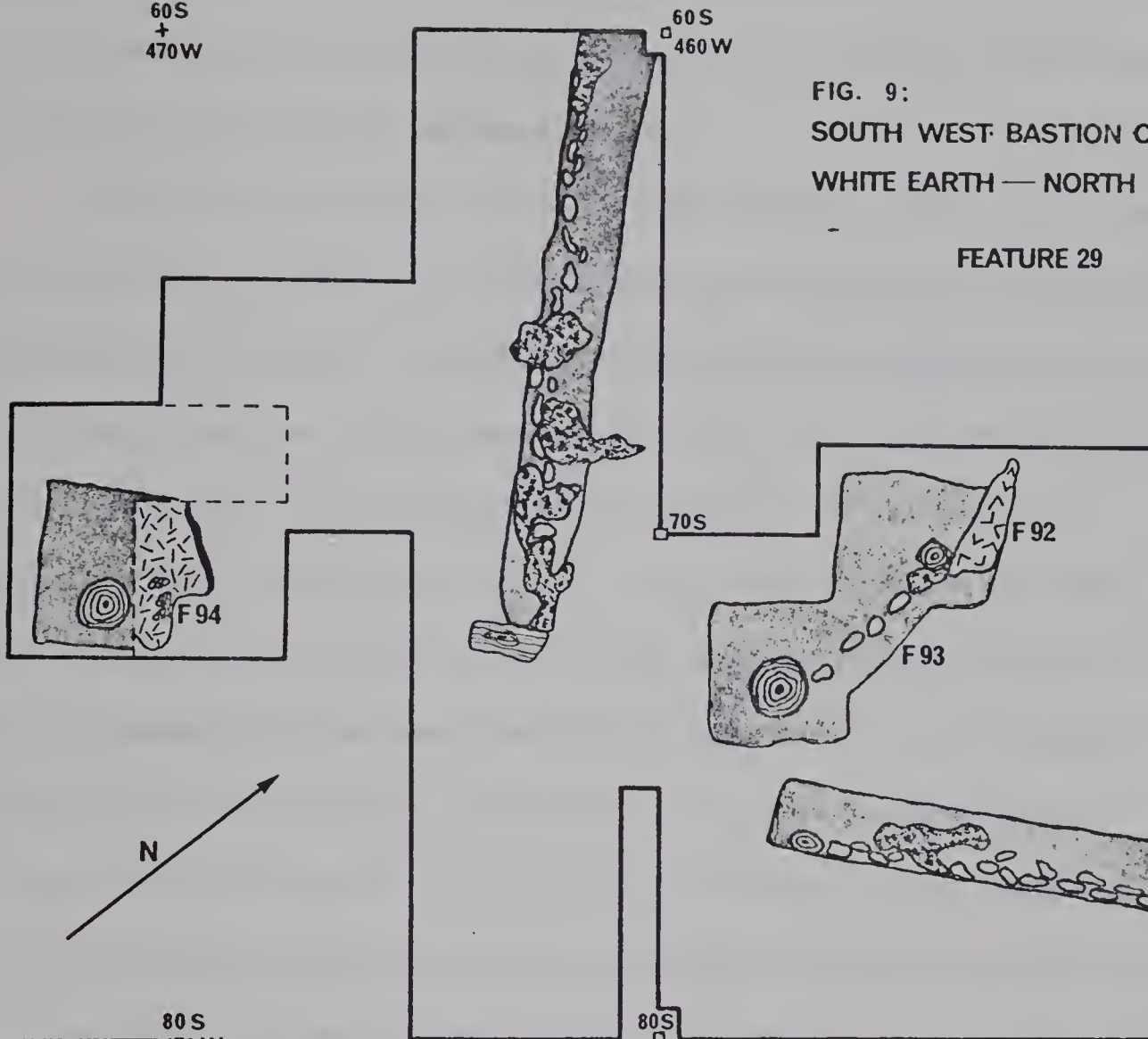
On this basis the bastion was determined to be approximately 15 feet square, outside measurement. The posts are over one foot in diameter at bottom, and wall logs are at least 8 inches thick. Chinking was present but not abundant. The structure was of the post-in-ground

60S
+
470W

60S
460W

FIG. 9:
SOUTH WEST BASTION OF FORT
WHITE EARTH — NORTH WEST CO.

FEATURE 29



N

80S
470W

80S

90S
+
460W

SCALE (in feet)



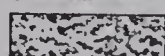
TRENCH FILL



BURNED SOIL



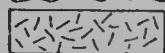
RODENT DISTURBANCE



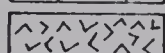
ROCK



ASH AND CHARCOAL



CHINKING



POSTS



type and was placed so as to command both the south and west walls. Access to the bastion could have been on either or both the east or north sides at the northeast corner of the building. The north side would have been more likely if only because the space was more ample--approximately five feet as opposed to two.

Near the northwest corner of the bastion, there was a small stone-lined fire or ash pit of problematical function and association. Designated as feature 94, the pit was located right against the post and intruded upon the area which presumably would have been taken up by the north bastion wall. It is thus quite possible that it was not contemporary with the bastion itself. It could not have preceded it, as the pit cuts into the trench in which the corner post had been placed. It could presumably have been used as a small fire for the night watch while the bastion was under construction. It could likewise have been used after the abandonment of the post by a party of men camping at the site. It certainly dates from a time roughly contemporary with the post. Lead shot and balls found in the pit suggest that one of its uses may have been to heat lead for the casting of balls, and the presence of burned bone may indicate it was also used for cooking.

The most likely explanation is that feature 94 dates from a time after the abandonment of the post. This hypothesis would explain why the pit cuts into the area occupied by the bastion structure. Presumably, the old post might have been a favoured camping spot for a few years--as long as it remained clear and easily accessible from the river and its falling timbers a ready source of fuel. Its distance from the river might limit its usefulness as an overnight camping spot, however, and it is perhaps more likely to have been used by a party of

men returning to the post to salvage useable building materials.

Whatever the purposes of its users, it seems likely that this feature would not long postdate the abandonment of the fort.

At the northeast corner of the bastion there was another puzzling feature. A line of posts (feature 93) filled in the distance between the corner post and a large square post four feet to the north. It seems most likely that this was an interior barrier between the bastion and the southwest corner of a building associated with features 89 and 90. The function of this barrier is uncertain, and it may have served any of a number of housekeeping functions. If it had any defensive purpose, it might have been to cut off access to the bastion from the central courtyard to which the Indians undoubtedly had access.

The northeast corner of the fort offered some different but even more puzzling aspects. At the apex of the corner was an extra-heavy post approximately 0.8 feet in diameter. Between it and the nearest picket in the north wall there was a gap over 2.6 feet, largely filled by an irregular but heavy concentration of ash. On the east side one picket abuts the corner post, but there is a gap of 1.8 feet before the next picket is to be found. A lateral extension of the trench at this point, ca. 2.5 feet south of the corner, provided for a large post 0.8 feet in diameter outside but abutting the stockade.

There clearly seems to have been some sort of special defensive structure at this corner, but it could not be the same as that at the southwest corner. Particularly puzzling proved to be the gap in the north stockade, filled as it was with a heavy deposit of ash and burned bone. A deep section at this point merely added to the mystery. The ash pit was over two feet deep and immediately overlay heavily

burned fill. This fill contained circular vertical molds of burned-out posts which would have completely filled the gap. Clearly, the gap postdates the original construction of the stockade. Whether or not it postdates the occupation of the fort is problematical.

Median Wall: The median wall was less substantial than the outside ones, but nonetheless much more than a simple picket fence. It was constructed by the North West Company men in the summer of 1810 (Coues, 1897:604, 618). A single line of posts was placed in a trench averaging 1.2 to 1.3 feet in width, dug to a depth of about 2.4 feet below the present surface. The pickets were about 0.3 to 0.5 feet in diameter and were placed approximately 0.2 feet apart from each other at the base. On the same basis as used in estimating the height of the outer wall this palisade would probably have been approximately 10 to 12 feet high, with fairly substantial gaps between the individual posts. At the north end of the median wall there was a wide gap in which no stockade posts remained. This gap measured approximately 12.5 feet across and probably provided an interior means of access from one post to the other, a passage which might have been controlled by a gate. No positive evidence of a gate was uncovered.

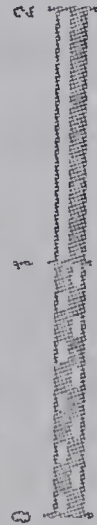
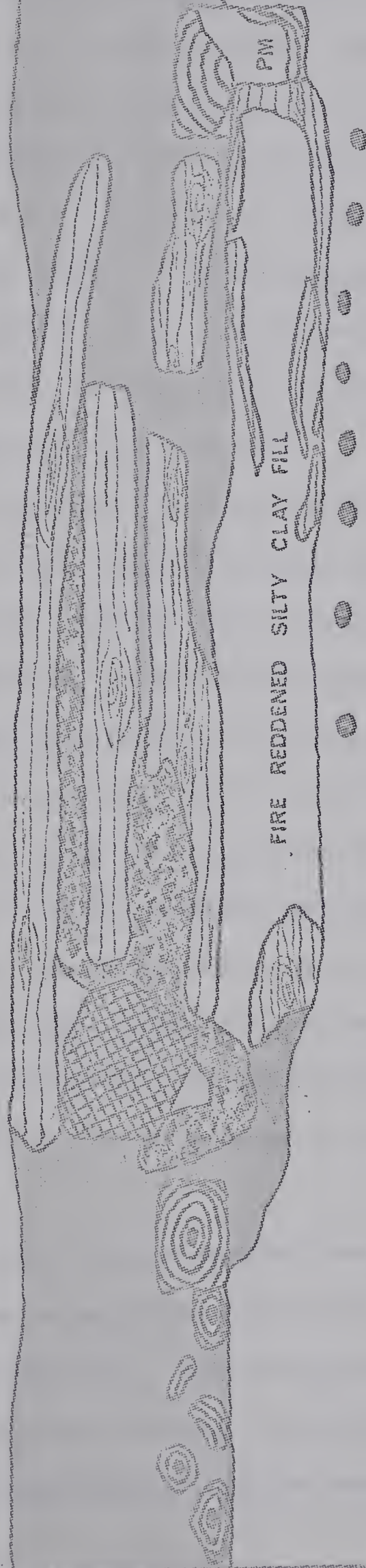
Gates: Much better evidence for gate construction was found in excavation of three exterior gates, two into the North West Company post and one into the Hudson's Bay Company post. The north gate into the Hudson's Bay Company was the first to be discovered. Surface indications of a raised passageway west of building feature 35 leading towards the north wall suggested there should be a gate at the intersection of the wall and passageway. There proved to be a gap in the stockade at this point measuring approximately 7.3 feet from east to

west. At the west end there was a concentration of bone centering on a vertical rodent hole which resembled a post hole in size and depth. It was about 0.6 feet in diameter and plunged almost 4 feet straight down. Probably it is the negative imprint of a post destroyed by rot and rodent activity. The east end featured a large shallow expanse of calcareous sandy fill which overlay another vertical "hole" only slightly smaller than the one at the west end. The space in between, which was only 6 feet long, contained remnants of horizontal timbers which undoubtedly served as sill logs in the gate. Traces of these timbers were found almost 1.5 feet below the present surface.

The south gate of the North West Company was discovered while tracing the south wall of the fortification (Fig. 10). This was the best-preserved and most elaborate gate feature excavated. At each end of a $7\frac{1}{2}$ foot gap in the stockade there was a large squared post. The one at the west end measured 0.4 by 0.65 feet, with the long axis parallel to the stockade, and the one at the east was approximately 0.75 feet square. The east post was cut into on the southwest corner in the manner of a door jamb, the area removed measuring ca. 0.2 by 0.4 feet, with the long axis perpendicular to the stockade line. Between the gate posts there was a gap of 6 feet floored by sill timbers placed side by side parallel to the line of the stockade. There were four in all, forming a sill ca. 1.7 feet across. The outermost timber lay just outside the line of the stockade and, as it lay closest to the present surface, was the most fragmentary. It appears to have been held in place against horizontal displacement by a row of small stakes driven into the ground as much as 1.9 feet below the present surface along the south edge of the timber. Eight of these remain, starting at the east

FIG 10: SOUTH GATE INTO NORTH WEST CO. POST — FORT WHITE EARTH

FEATURE 38



SCALE(in feet)



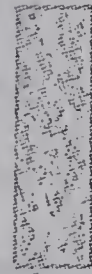
TRENCH FILL



ROCK



STAKES



RODENT DISTURBANCE

PM

POST MOLD

end and placed at intervals averaging 0.5 feet. The other three sill logs were found to lie at a greater depth. Whereas only a few charred remnants of the outermost one remained, the second was only partially charred and the innermost ones had escaped the fire completely. They underlay variable depths of trench fill, being uncovered from 0.8 to 1.1 feet below the present surface. The overlaying fill consisted of sand, clay and organic materials, with a considerable intermixture of stone, bone and some artifacts. A large granite stone was found lying slightly to the east and inside the west gate post.

Although excavations were not carried down to sterile soil, it appears likely that no special provision was made for a gate when the stockade trench was dug. When the gate was made, the trench was backfilled and a wooden sill constructed to give a stable base. As the fill beneath it became more compact the sill partially collapsed, and it was necessary to throw more fill in on top of the slumped sill to bring it up to the necessary level. The incorporation of midden material was undoubtedly accidental and was probably related to disposal habits of the fort's occupants. Concentrations of bone in and around each excavated gate suggest that disposal of some midden material, at least, was somewhat casual. Presumably the inhabitants of the fort threw the bone outside the gate--and it is apparent they went no further than necessary.

The structural evidence suggests that the south gate of the North West Company was a single one 6 feet wide, opening outward and pivoting on the west gate post. There is no evidence as to the type of gate hardware employed, nor the actual construction of the gate itself. It seems likely that both were removed for reuse at another site.

The north gate of the North West Company was similar in preservation to that of the Hudson's Bay Company. Located in a swale where there has been considerable recent deposition, the gate has been protected from damage by cultivation. Despite this, the remaining evidence was not easy to decipher. The posts at either end of the gate, 7.6 feet apart, do not appear to be different from the stockade posts in any way. They are distinguished by neither method of treatment nor size. Unlike the other gates, there is a gap in both the stockade and the stockade trench. The gap in the trench is, however, much narrower and somewhat indeterminate. Although it ends abruptly at the west side, it merely peters out on the east. The gap is, in any event, less than three feet wide. Horizontal sill timbers, preserved by the compaction of trench fill and subsequent burial under subsidiary trench fill, remained at the east end of the gate. The fill overlying and underlying the timbers contained considerable bone material--as did the trench fill of the stockade itself--particularly west of the gate. In the fill underlying the sill timbers there were small segments of heavy timber arranged in a random fashion--where they had been placed, apparently, to give a firm foundation for the gate sill.

A deep section at this gate revealed that the trench underlying the east end of the gate had a depth of at least 2.5 feet below the present surface. The section also revealed that deposition subsequent to occupation had protected this area from plow damage. Yellow-grey clay fill overlying the old humus layer represented the remains of material displaced during the trenching operation. The majority of this material was along the exterior side of the palisade.

Building Construction: Parts of four buildings were

excavated. These are designated features 33, 34, 35, and 40.

Feature 33 (Fig. 11). This building feature was uncovered in excavations in 1966 and 1968 and is the one in which the least work was done and about which the least is known. It is approximately 21 feet wide between the centers of the corner posts. The length is indeterminate, but must have been at least 18 feet, assuming the unexcavated depression (feature 7) immediately south of the north wall of feature 33 to have been a cellar associated with the building. An even larger depression, feature 8, further south may have belonged in the same building.

Post-in-ground method of construction was used. The two corner posts excavated at the northeast and northwest corners were both 0.6 x 0.8 feet. The vertical grooves of the northeast post appeared to be ca. 0.2 feet wide and 0.15 feet deep. The horizontal filler logs were very poorly preserved, but appear to have been at least 0.7 feet wide in places.

Joist placement in the limited area excavated was on a center of ca. 4.5 feet, with the two outside joists about 2 feet in from the outside walls. The joists are of hewn timbers 0.4 to 0.6 feet wide and of indeterminate thickness. When excavated, the minimum thickness was 0.2 feet. On the basis of outside measurement it is apparent that not all joists were in the same relationship. An unexcavated fireplace, feature 6, along the north wall might account for some deviation from a rigid pattern.

The floor consisted of butt planking running east and west across the building. It was charred but in good condition and appeared to be about 0.15 foot thick. The planks tended to be quite wide, 0.6 to

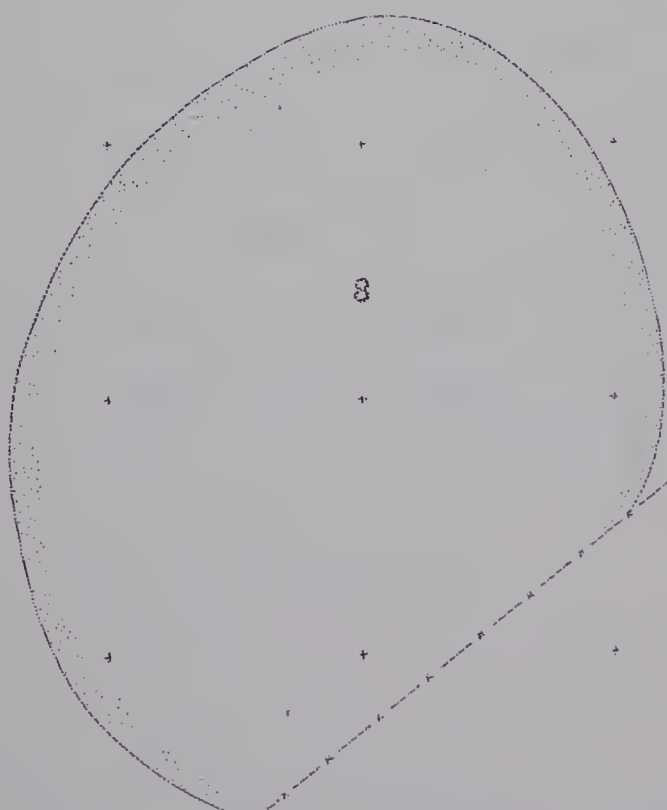
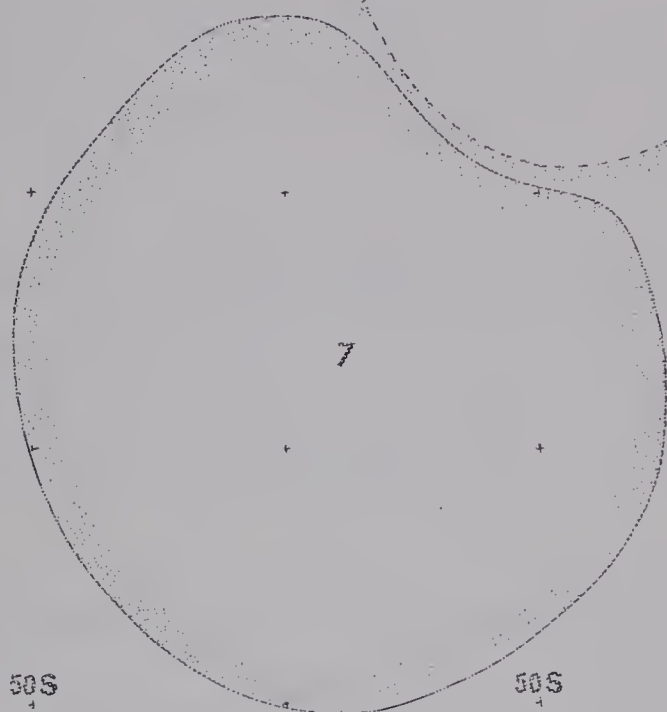
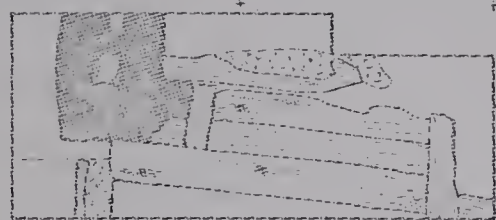
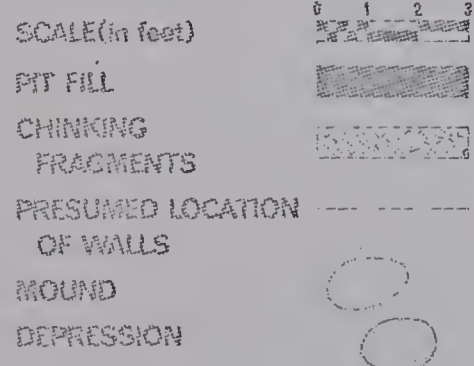


FIG. 11:
BUILDING FEATURE 33



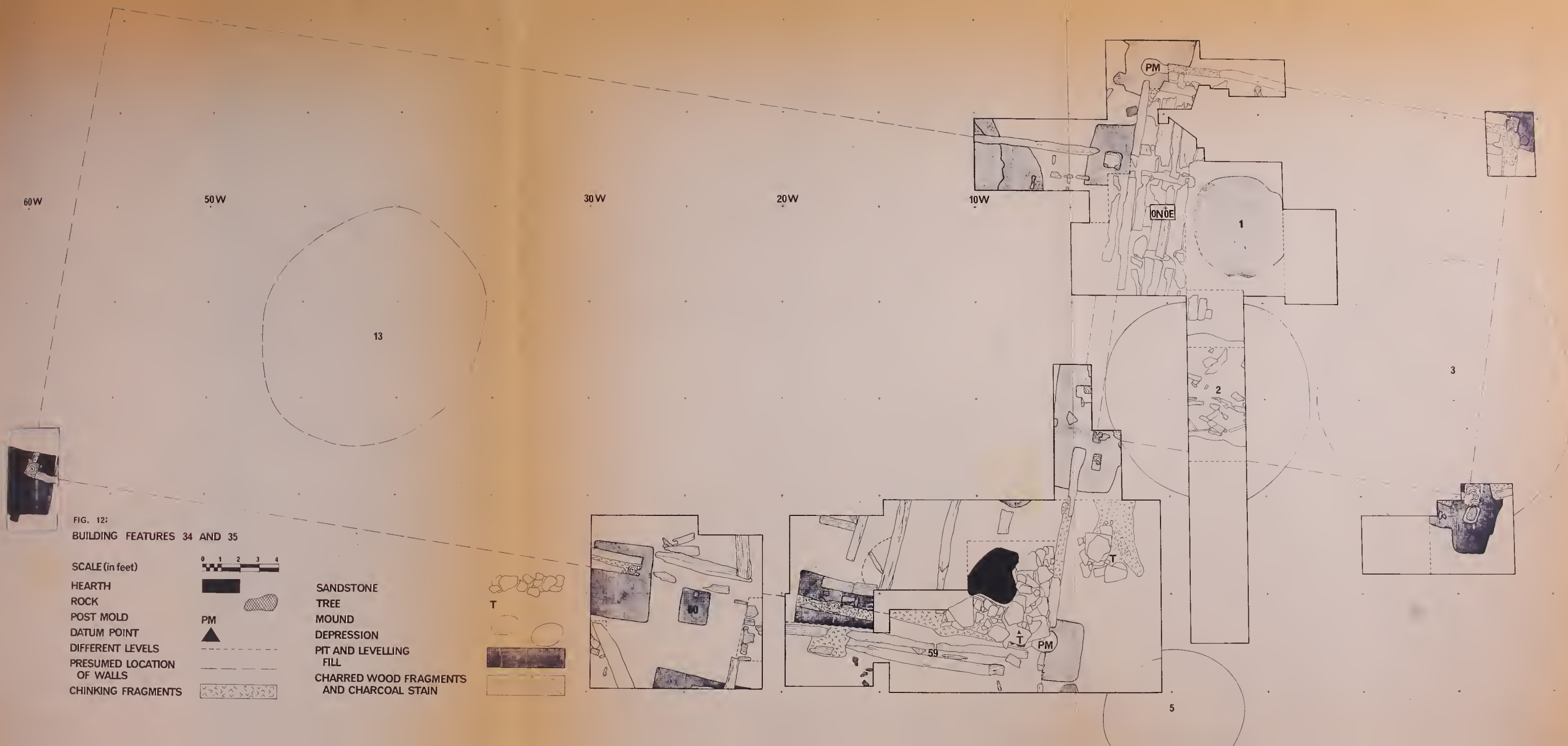
0.8 feet, and appeared to have been sawn.

Heavy concentrations of chinking found along the walls have been tentatively analyzed by Mr. R. Lehne and J. S. Nicks. A general discussion of the results is included below.

Feature 34 (Fig. 12). This was the second structure in which major exploratory work had been conducted in 1966. Conclusions are therefore based on work done at that time as well as the much more extensive excavations in 1968. The building measured 20 feet by 20 feet between centers of corner posts, or close to 21 x 21 feet outside measurement. There were three subsidiary features within feature 34, a refuse pit designated as feature 1 and a deeper pit referred to as feature 2. Feature 3, a large stone mound along the east wall, was unexcavated.

Post-in-ground construction was used here also. Three of the four corner posts were excavated but no wall posts. The corner posts measured 0.6 x 0.9 feet, 0.4 x 0.55, and 0.9 x 1.2 feet, a variation from smallest to largest of over 100 percent in both dimensions. Some of this difference may be due to variable compression of timbers in the intervening years. The posts had all been at least partially squared and set into pits dug for the purpose. The depth of placement was not tested. Vertical notches seem to have varied considerably in size between 0.15 x 0.15 feet and 0.25 x 0.4 feet. The best preserved notch is now 0.2 feet wide and 0.3 feet deep.

Adjacent to the south corners and south of them were two posts, measuring 0.4 x 0.8 and 0.55 x 0.7 feet. Neither post bears any evidence of vertical notching, and their function is problematical. Perhaps they were support timbers related to some kind of porch or open



shelter situated to the south of feature 34. Chinking from this feature was also studied by Mr. Lehne and J. S. Nicks, and their conclusions are discussed below.

The building was probably completely floored, as traces were found in all areas excavated where it could be expected. The best preservation was in the northwest quadrant of the building, where the most extensive excavation took place. Joists were placed at intervals of ca. 4.5 feet, and the most northerly timber paralleled the north wall approximately 1.0 feet inside. The flooring consisted of planks at least 0.1 feet thick and of variable width (between 0.4 and 0.9 feet). There is no evidence for the use of any special edging technique, and indeed the high recovery rate for small artifacts below the flooring suggests it was none too tight. The surface of the flooring was relatively smooth, but too much burned and eroded to indicate clearly what treatment it had been accorded. In 1801 David Thompson mentions smoothing the floor of a house he built in Montana with an adze after it had been laid (Barbeau, 1945:11).

The floor was laid on top of a light buff sand fill of varying thickness. Sand apparently was used to level the base and also provide good drainage under the floor so that it would stay dry. It is also possible that the need to cover up feature 1, a sub-floor refuse pit, helped to convince the builders to go to the necessary trouble.

The pit designated as feature 1 lay wholly underneath the floor of the building and isolated from it by the sand fill and wooden floor (Fig. 12). It appears to have been a simple circular pit, with a saucer-shaped bottom and nearly vertical walls. It was about 4.5 x 5 feet and probably had an original depth of about 2.25 feet. It had been

completely filled with a narrowly layered clay and humic fill, with sandstone fragments and bone concentrated near the bottom. The bone was broken into small pieces, many of which had been obviously chewed, and represented a number of mammal, avian, and fish species. It seems likely that the pit was used for the disposal of kitchen refuse prior to the building of feature 34, i.e., probably for the first winter and into the summer of the second year. The heavy concentration of refuse near the bottom of the pit would represent the winter's contribution, whereas the layered depositions towards the top of the pit might well reflect a practice of throwing some earth over the refuse periodically in warmer weather in order to keep down the flies and the smell. Similar practice is common among rural residents today who do not have access to the luxury of periodic garbage collection. On the basis of this interpretation it seems probable that building feature 34 was raised in 1811.

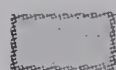
A second pit, feature 2, was located south of the first one (Fig. 13). This was much deeper and larger and proved to be contemporary with the building in which it was situated. Almost six feet deep at the deepest point below the original humus line, it was roughly rectangular in shape. The north-south dimension was 5.4 feet, but the east-west one is not known. When excavated to the bottom, the pit was found to be filled with approximately four feet of layered fill which included a considerable quantity of structural materials. Artifact recovery was disappointingly low.

No evidence for wooden cribbing was found in feature 2. The lowest layer was sand similar to that underlying the floor in other parts of the building. Lying on this was a layer of randomly oriented and very poorly preserved wooden fragments which showed no signs of

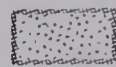
CULTURAL STRATA



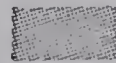
ORGANIC LITTER AND HUMUS



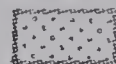
BUFF SILTY CLAY WITH SMALL FLECKS OF CHARCOAL, CHINKING, ETC.



MIXED CHINKING, CHARRED TIMBERS, ASH WITH SOME CLAY AND SILT



BURN ZONE OF []



FILL VARYING IN TEXTURE FROM SANDY SILT TO SILTY CLAY CONTAINING CHARCOAL, CHINKING, AND ARTIFACTS

a. LIGHT BROWN SILTY CLAY

b. BUFF SILT

c. BUFF SILT MIXED WITH LENSES OF BUFF SAND

BUFF SILTY CLAY WITH VARYING CONCENTRATIONS OF CaCO_3 FINE BUFF SAND WITH VARYING CONCENTRATIONS OF CaCO_3 

BURNED WOOD

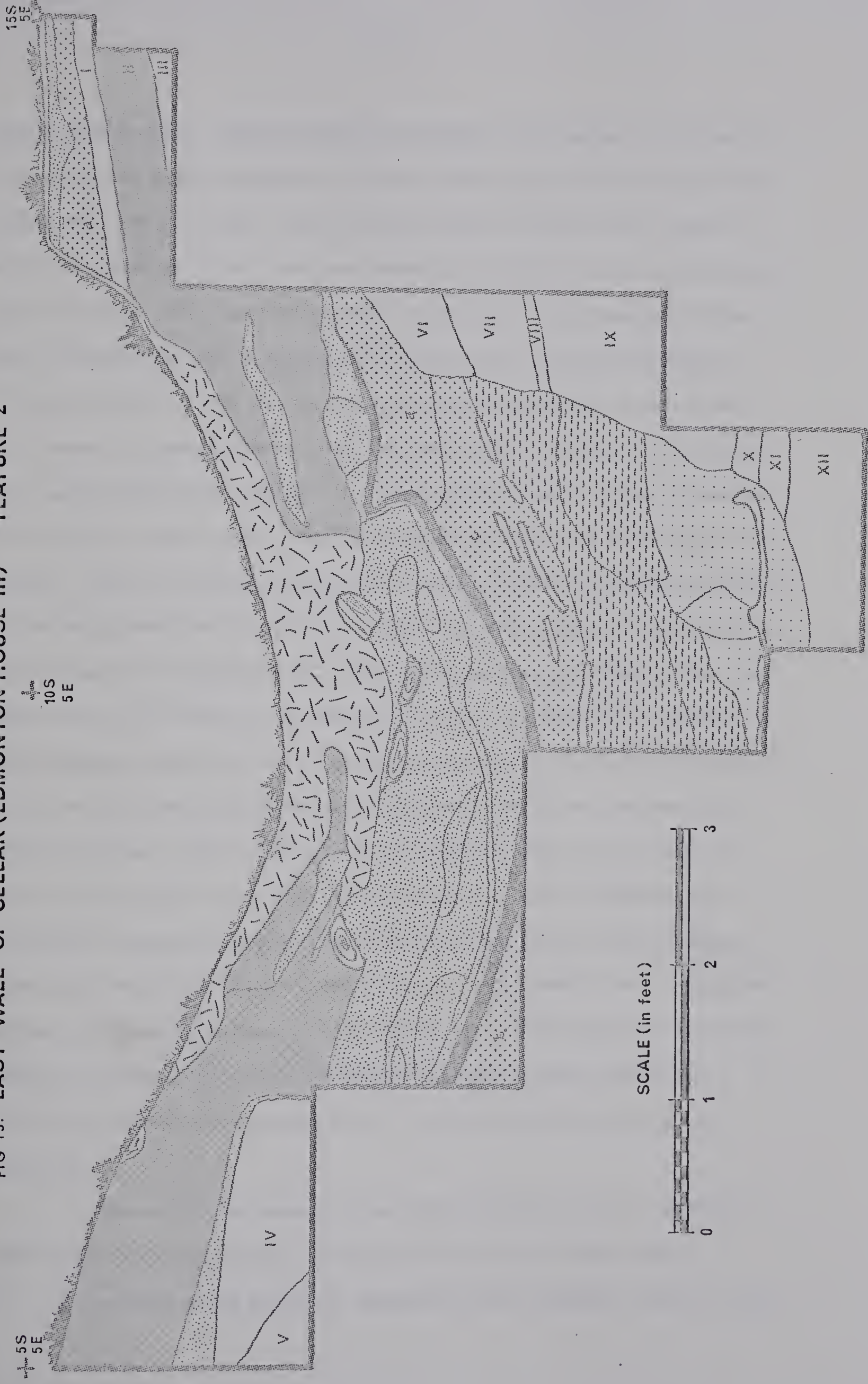


UNBURNED WOOD

NATURAL STRATA

- I MEDIUM BROWN SILTY HUMUS
- II BUFF SILTY CLAY
- III BUFF SILT
- IV BUFF SILTY CLAY
- V BUFF CLAYEY SILT
- VI LIGHT BUFF SILTY CLAY -- HIGHLY CALCAREOUS
- VII BUFF TO GREY FINE SAND
- VIII LIGHT BUFF SILTY CLAY -- HIGHLY CALCAREOUS
- IX FINE GREY SILTY SAND
- X GREY SILTY CLAY
- XI FINE GREY SILTY SAND
- XII MEDIUM GREY SAND

FIG 13: EAST WALL OF CELLAR (EDMONTON HOUSE III) — FEATURE 2



having been burned. These probably represent the remains of a floor of wood chips and small fragments of board used to keep the bottom of the cellar dry. This "floor" was relatively flat and five feet below the main floor level. It in turn was covered by layers of virtually sterile sand and silt. This deposit probably represents a collapsing of the walls, probably in the spring of the second year of the building's occupancy (1812?). The layers were thinnest towards the edge of the pit, where the deposits were over two feet thick. Small wood fragments were again thrown into the pit to form a storage cellar with a concave rather than a flat bottom. Now the cellar was only 3.6 feet deep in the center. This in turn was covered by a zone of silt clearly derived from the widening mouth of the pit and containing some charcoal flecks and tiny fragments of mud plaster. Although considerably thinner than the lower fill--0.35 feet at the center to almost 1.0 feet at the edges--it may represent several years of slumping and filling activity from the spring of 1813, when the post was abandoned, until the time when the building burned. This slump zone is isolated from those above by a heavy burn line which in turn is overlaid with charred timbers and burned mud obviously derived from the superstructure of the building. These are covered by debris-laden silts and clays which form a complex pattern of slumpage and water-laid deposition. The highest fill levels consist of forest litter and partially decomposed humic materials overlying evidence of a second fire. This may have occurred quite recently.

The wood illustrated in the plan view (Fig. 12) is between 3 and 4 feet below the present surface of the site at stake 15S5E.

A large stone mound is situated in the southeast corner of the

building adjacent to feature 2. Designated feature 3, it was not excavated. It nevertheless is almost certainly a fireplace of substantial size.

Feature 35 (Fig. 12). The largest building unit excavated, this feature was without doubt the trading house of the post. Measuring about 27 x 54 feet, it appears to have been a solidly-built structure, quite possibly two storeys high. All evidence points towards a classic post-in-ground structure.

Corner posts were heavy timbers ca. 0.9 feet square set into the ground and notched on two sides. The notches, unlike those in the adjacent structure, tended to be broader and possibly shallower. They are ca. 0.35 feet wide, but depth cannot be measured with any certainty. Wall posts also proved to be quite substantial, particularly the one located in the center of the east wall. At least 0.9 feet square, it undoubtedly had to support the ridge pole, and for this role needed greater length and strength than most other members in the structure. Posts along the south wall measured 0.6 x 0.7 feet and 0.6 x 0.9 feet, and thus were smaller but still large in comparison with those in other buildings. They were ca. 10.5 feet apart. They appeared to have been squared so as to be of the same thickness as the filler logs, although they varied in width from 0.7 to 0.9 feet. The filler logs were 0.5 to 0.6 feet in thickness. No evidence of their original width is available, but chinking indicates that some fairly large timbers were sometimes used in this role.

Three feet east of the second post from the east along the south wall there is a small post which probably is related to a door. This interpretation is supported by the chinking found in the vicinity,

planks and metal hardware within the building, and remains of a wooden sidewalk and platform outside the building. The latter two point to the door being on the east side of the upright post 18 feet west of the southeast corner of the building. The complex of door and framing included well dressed planks about 0.1 foot thick and 0.5 to 0.7 feet wide, held together with clenched nails. No evidence of hinge or lock construction was found.

A walkway, feature 59, consisting of two parallel slabs, ran just outside the south wall of the building with its inner border less than a foot from the wall (Fig. 12). It is no more than 1.5 foot in total width. It began just west of the building corner and ran to a point 15 feet west of that corner where it met a platform placed outside the hypothesized doorway. The platform was set on runners oriented at right angles to the wall and consisted of parallel planks about 3 feet long and up to 0.75 feet wide. It is not inconceivable the platform was covered. Post feature 60 may have served as a subsidiary support for such a roof added after the initial erection of the building.

There is very little evidence for internal construction details in feature 35. Although it is highly unlikely that no floor existed, little evidence for such a feature was uncovered. Several parallel timbers in the southeast corner area of the building may have been floor beams or joists. Starting from the east wall, there was evidence for three at intervals of about 3 feet and a fourth about 2 feet further. Profiles across two joists revealed that they were set over small trenches of variable width and depth which were filled with a mixture of old humus, silt, and limey soil. It appears that the unstable humus had been stripped off and the trench left filled with

more solid material to make a firm base for the timbers. Joist timbers were at least 0.2 feet thick and 6 to 7 feet wide. If the last timber located was along an internal partition, as seems quite likely, the southeast corner room of the building was ca. 10.5 feet internal length east to west. A gap between the south end of this timber and the outside wall post may represent an internal doorway ca. 2.5 feet wide.

In the southeast corner of feature 35 a corner fireplace, feature 4, currently about 7 feet wide and 5 feet deep, was excavated. The walls, made of sandstone slabs, are up to 2.5 feet thick. The raised hearth is very broadly U-shaped and 2.5 feet deep. Presently, the compact ashy floor of the hearth extends beyond the walls of the fireplace. Undisturbed remains of the chimney stand about 1.75 feet above the hearth. The hearth itself is 0.8 feet above the 1810 humus and about 0.5 feet above the charred joists.

Concentrations of burned chinking from the south and east walls run just outside the two walls of the fireplace. The southeast corner post immediately behind the fireplace has been destroyed by rotting and rodent activity. All that is left of it is a few pieces of wood in a post mold about one foot across and one foot deep.

About 0.5 feet east of the east wall of feature 35 a low pile of large and small sandstone slabs was exposed. The pile is outside any building structure, and there is no obvious function it could have served. Possibly it dates from the beginning of this century, when many of the Ukrainian settlers in the area exploited the fort's chimneys as a ready source of foundation stones.

Feature 40 (Fig. 14). This feature consists of a fourth building which was partially excavated. It is located about ten feet

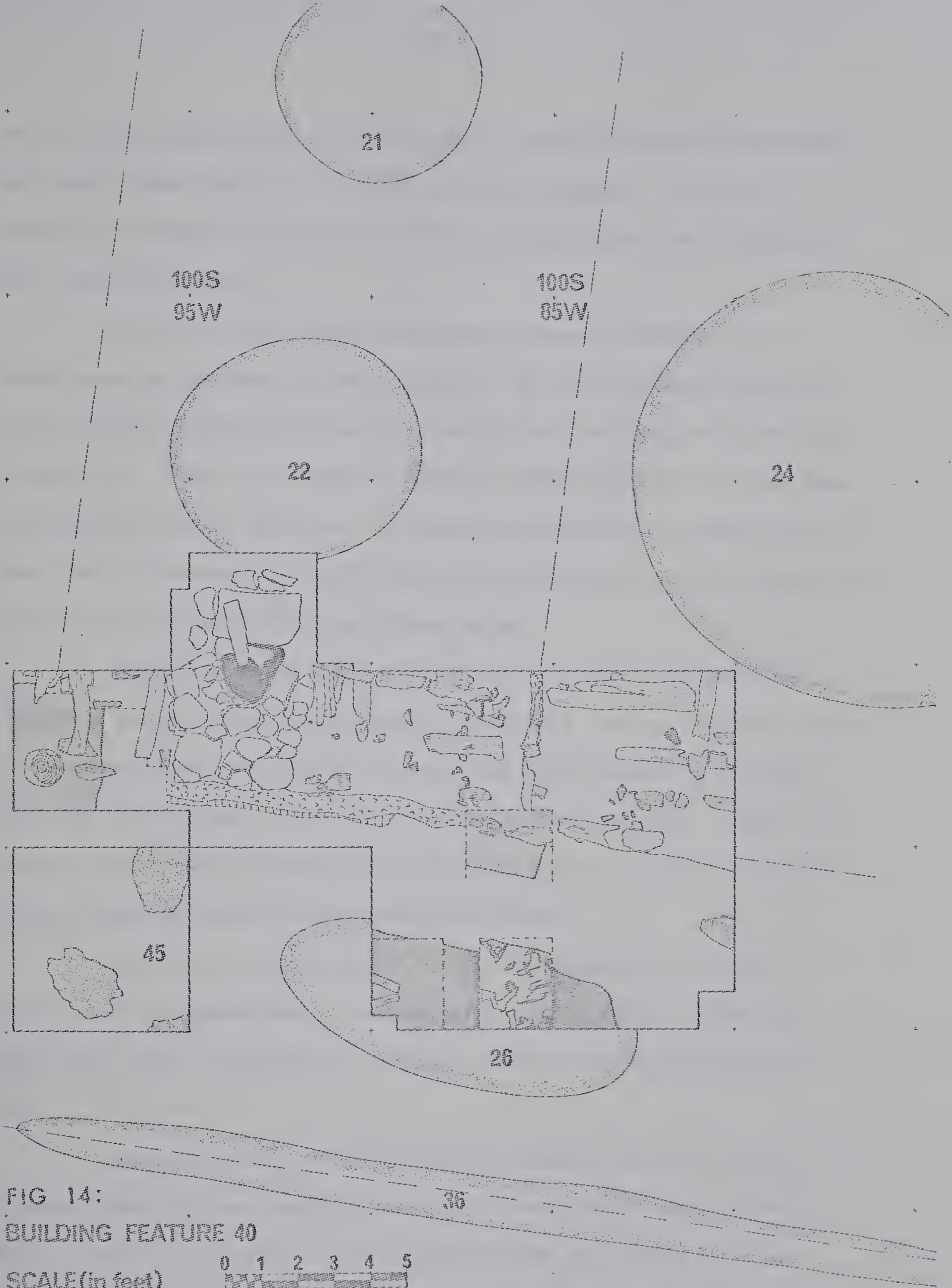
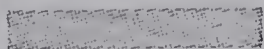


FIG 14:
BUILDING FEATURE 40

SCALE (in feet)



PIT FILL



ASH PIT



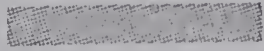
TREE

T

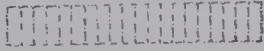
ROCK



HEARTH



BURNED SAND FILL



PRESUMED LOCATION
OF WALLS AND
STOCKADE

SANDSTONE
DEPRESSION

CHINKING
FRAGMENTS



inside of the south wall of the palisade. Basically part of the south wall and a short length of the west wall were exposed. It is not possible to suggest dimensions for the building except that the south wall was 20 feet long.

Like the other three buildings, feature 40 proved to be constructed by the post-in-ground method. At the southwest corner of the building a poorly preserved post nearly one foot square is set into a large pit. There is a single notch 0.25 feet wide and 0.16 feet deep on the north side of the post. A similar notch would be expected on the east side to accommodate the filler logs of the south wall, but none was noted, possibly due to the poor preservation.

Along the south wall, some 12.5 feet east of the southwest corner, a second smaller but equally rotted wall post was located. This post now measures 0.4 feet by 0.5 feet, and has evidence of only one notch, 0.16 feet deep and 0.25 feet wide, on its west side. Again, a similar notch would be expected on the east side of the post to receive the wall logs for which there is ample evidence.

As well as the two posts, there are intermittent charred timbers and concentrations of mud chinking, some in situ, along the south wall line. A fireplace, described below, was located along the wall.

Charred remains of five joists to support the floor were located. East of the fireplace there are three joists set 4.5 feet apart. There is one joist just inside the west wall which is 9 feet from the first of the three joists described. Although sufficient area was not exposed to demonstrate the point, one might expect that once clear of the fireplace a joist would be added between the two which are

9 feet apart. Possibly a timber running along side the west wall of the fireplace and about 2 feet from the westernmost joist is also a joist. In all cases the joists are presently about 0.4 feet across. Originally, they would have been somewhat larger. None of the joists still extended as far as the south wall logs when exposed; therefore there is no information as to the manner of articulation of these elements.

Within feature 40 are many fragments of charred sawn plank flooring which currently measures 0.4 to 0.8 feet across and about 0.08 feet thick.

A prominent feature along the south wall was a small stone fireplace, designated feature 23. It is located 4 feet from the southwest corner. At present it measures some 4 feet across and 4 feet deep, and has a small expanded U-shaped fire box now about 1.5 feet deep. As with other chimneys at the site this one is constructed of flat sandstone slabs. When excavated, a large slab was found resting on its edge in the fire box as if it had slipped from the mantle position. The fire box floor was covered with a thick layer of ash. Immediately east of the fireplace, there are three short lengths of sawn board, each about 0.25 feet wide, running north-south. Directly behind the chimney, there is a considerable quantity of mud chinking still in situ in line with the south wall.

The fireplace faces directly on feature 22, a small depression which may have been a small cellar under the building of which feature 40 is the south wall.

Some 3.5 feet south of feature 40 is a large refuse pit (feature 26) which is 10 feet long, about 4 feet wide, and up to 3 feet in depth below the original occupation surface (Fig. 14). The

walls of the pit are quite vertical. Two small excavations in this pit revealed fragments of two charred timbers and many broken limb bone of moose, bison, elk, deer and lynx (in order of frequency of occurrence). Over this material are layers of sand and silt.

South of the southwest corner of feature 40, three small concentrations of ash were excavated (feature 45, Fig. 14). Probably these represent periodic disposal of ash when the hearth was cleaned. These ash deposits were rich in small artifacts.

Discussion

On the basis of archaeological and documentary research some similarities and differences in construction projects at Buckingham House and White Earth can be suggested.

In terms of size both posts occupied palisaded areas slightly greater than 27,000 square feet. At its maximum extent the Buckingham House palisade appears to have enclosed an area 187 x 140 x 195 x 145 feet. At White Earth the Hudson's Bay Company's Edmonton House III comprised some 160 x 169 feet of a total stockaded area 472 x 169 feet.

The similarity in size suggests roughly equal numbers of inhabitants. This hypothesis may have been true, but it is difficult to demonstrate. The greatest number of inhabitants indicated in the Edmonton House III post journals was 166 in 1810 (HBC Archives, B.60/a/9, Reel IM49). In the spring of 1794 daily records of the numbers of men dispatched to York Fort with furs and the number staying inland indicate there had been at least 55 men at Buckingham House that season. At this time Buckingham House was the main post on the North Saskatchewan. The expansion of the stockade between the spring of 1794 suggests some

increase in manpower in the second year of operation. Some of the increase was the unplanned result of the pillaging of the Hudson's Bay Company's Manchester House downstream on Pine Island by the Gros Ventres in the fall of 1793. The journal entry for November 1, 1793, indicates that most, if not all, the men assigned to Manchester went to Buckingham House. Likewise the men intended to winter at South Branch House for the 1794-95 season may have journeyed on to Buckingham House when they discovered their post had been destroyed by the Gros Ventres in the summer of 1794. Only once is an exact number of men indicated for Buckingham House. Peter Fidler records 33 men present in the winter of 1796, when Buckingham House was subsidiary to Edmonton House I. Like the 1794 figure, this does not take into account women and children. One James Spence, who died in 1796, had a wife plus four children at the post. However, Spence was then 42 years old and had been inland many years, while many of the men would have been relatively younger and newer arrivals who had had less time to augment the population of the fort.

If excavation could reveal the area of each fort which was given over to living quarters, it might be possible to determine the number of inhabitants for which the posts were designed. Since both were short occupations, there are no problems of rebuilding. But there would be problems of interpretation of structures excavated, especially since cultivation has destroyed some part of the evidence at both posts.

No doubt buildings were intended to serve similar functions at both posts. At Buckingham House there was a two storey trading house and residence complex, an unknown number of men's cabins, a victual and/or ice shed, and a blacksmith's shop at least. Many similar

buildings are recorded by Henry for White Earth and probably would have been in use in Edmonton House III as well. While there is little evidence for the location of structures at Buckingham House other than the trading house, surface mounds and depressions at Edmonton House indicate a series of separate house and/or connected apartments surrounding a rectangular courtyard. Features 34 and 35 were so very close that if, indeed, they did not share a common wall, the buildings must have nearly been abutting. More extensive and careful archaeological research would certainly give a clear picture of the locations of structures and would go some distance towards functional interpretations.

At present neither digging in the ground nor in the archives has revealed much about interior building construction. Floors were made of sawn planking set on joists. Partitions of sawn boards served to divide buildings into rooms. Windows were most likely of translucent parchment rather than glass.

Details of construction techniques employed in palisades and building exteriors cannot be readily compared because of the unevenness of the data. At both posts palisades were set into trenches, but there is no direct evidence that the White Earth stockades had first been stripped of their bark, pointed, and attached to horizontal ribbons as they had at Buckingham House. Archaeological evidence at Buckingham House suggests that the palisade was a single line of posts set centrally in the trench, unlike the White Earth stockade of staggered posts set against the outside of the trench. So little of Buckingham House was exposed that this conclusion must be tentative. Further work at the early post would clear this point and would also reveal whether or not anchor posts were employed and if so how frequently. It would be

of interest to locate the watch house mentioned in the Buckingham journals and compare the construction methods with those used for the bastion at White Earth. Finally, the different heights estimated for the palisades at the two forts may be slightly misleading in that the Buckingham House estimate was on post ends which had been truncated by cultivation. A loss of 9.6 inches underground length would be sufficient to reduce estimated above-ground height by 4 feet. Depth of the plow zone over the stockade posts at Buckingham House varied between 4 and 11 inches.

Regarding types of wooden house construction employed in the northwest by the North West Company and "later" the Hudson's Bay Company, Barbeau has stated that the common method was "poteaux sur sole" or posts-on-sill (1945:10). This method ultimately originated in northern France and came to Canada with settlers of New France and to the northwest with the voyageurs.

It consisted of horizontal logs, usually squared, slid in grooves into position between squared uprights, which were planted by means of mortices into heavy squared logs forming a frame or sill for a foundation. (Barbeau, 1945:10)

Barbeau's illustration is included as Fig. 15.

The method of construction at Edmonton House III was very clearly not "posts-on-sill" but "post-in-ground" in all four buildings exposed. Briefly, in this method heavy upright corner and wall posts with vertical grooves are first set into pits and stabilized. Then horizontal filler logs with tenons to fit into the grooves in the posts are dropped into place.

The post-in-ground technique is readily recognizable

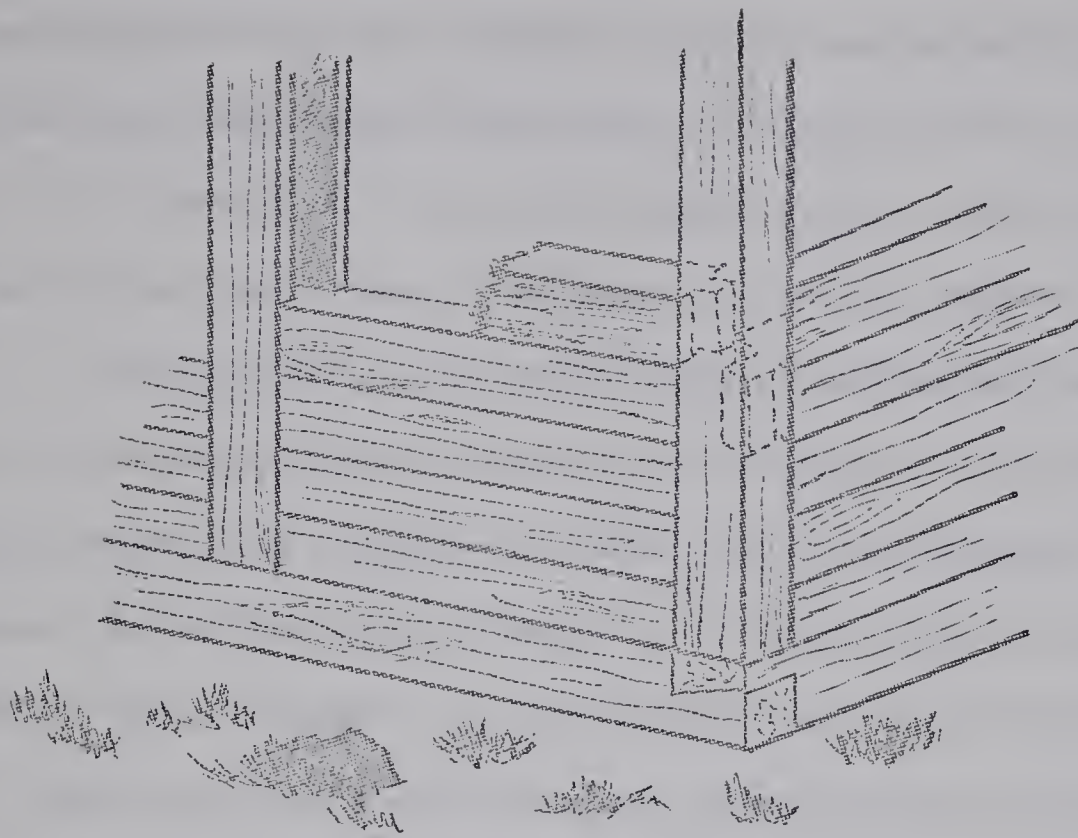


FIG 15: POSTS ON SILL CONSTRUCTION.
(after BARBEAU 1945:10)

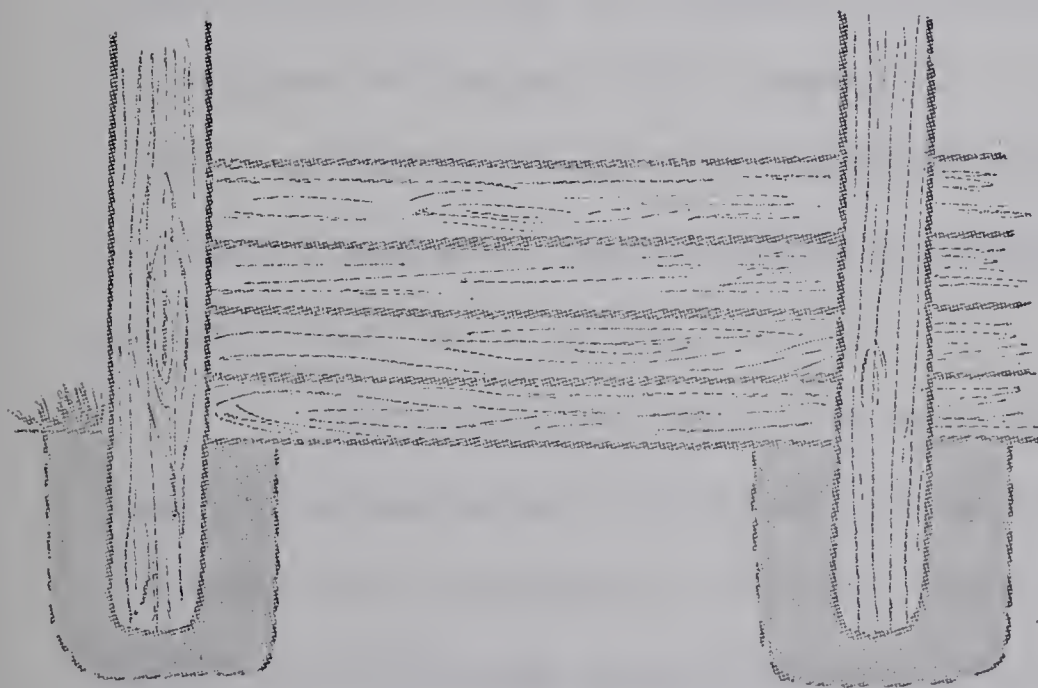
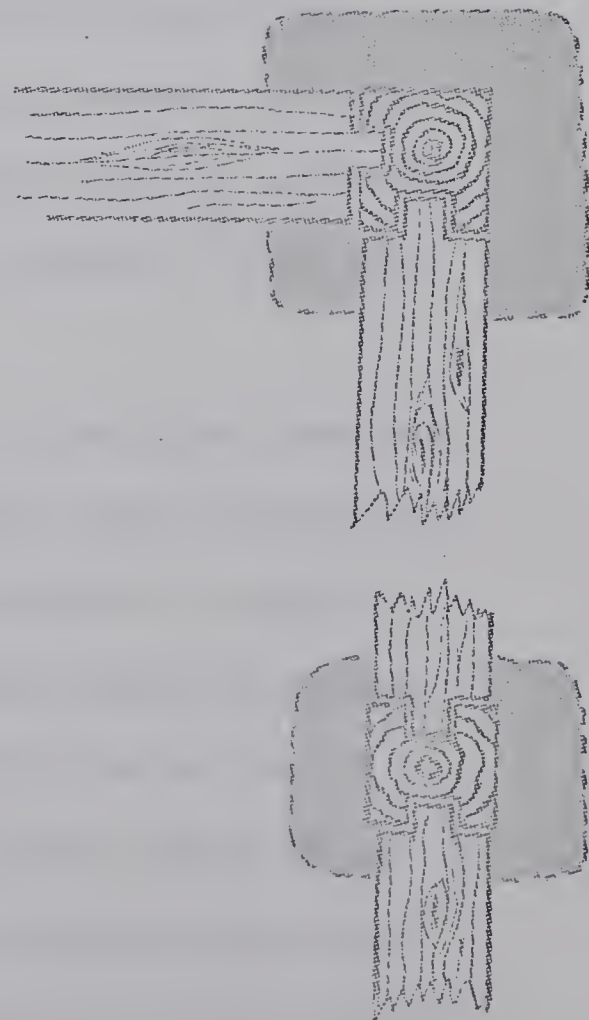


FIG 16: POST IN GROUND CONSTRUCTION.



archaeologically from the different texture and color of soil in pits compared with undisturbed ground and, of course, posts or post molds. Fig. 16 is a sketch of this type of construction, and it is quite obvious in the plan views of features 33, 34, 35, and 40.

Unfortunately, the method used at Buckingham House cannot be clearly ascertained from archaeology or documents. The reference to hewing sleepers and "digging for them" can be interpreted several ways. A general definition for a sleeper is "a heavy beam resting on or in the ground" (Funk and Wagnalls Standard Dictionary of the English Language, 1960). Thus, the term could encompass timbers used as joists, sills, or footings. Evidence from other fur-trade posts indicates that each of these specific types of sleepers could be associated with a trench. As already discussed, the joists in feature 35 at Edmonton House III were set over small trenches filled with more stable material than humus. Sills were set on top of trenches filled with clay and bone at Pine Island post of the North West Company (J. S. Nicks, personal communication). At Carlton House of the Hudson's Bay Company footings were found set into trenches of varying depth, presumably to provide a level base for sill logs (A. J. Ranere, n.d.).

The only other clue to the basic method of building construction in the Buckingham post journal is the fact that these problematical sleepers were positioned as the first step in erecting the trading house. It would seem logical that if post-in-ground construction were being used, the upright corner and wall posts would first be set in place. Likewise, it does not seem logical to lay floor joists as an initial step, especially when the journals record that the cellar was excavated as the walls were being erected. At present it seems that the

sleepers were either sills or footings, a fact which may indicate a "posts-on-sill" method of construction.

This problem can be resolved by further excavation. Assuming Barbeau to be correct in attributing the introduction of the posts-on-sill method to the French, it would raise some interesting questions if a pre-1821 Hudson's Bay Company post were using the method, especially Buckingham House, which was built by Orkney men.

Finally, the log cabin method of constructing exterior walls by fitting round logs together at the corners would not have been used. Barbeau points out that this method originated with the Scandinavians of Delaware Bay and was first brought into the American west by early nineteenth century colonists (1945:10). Even barring historical evidence, it would be illogical to think of buildings 26 x 63 feet or 20 x 72 feet (the North West Company Indian house at White Earth) constructed in the classic log cabin method immortalized in many a Hollywood western.

In conclusion some comments are offered concerning the use of mud chinking to interpret techniques of building construction. Large quantities of the chinking used to fill cracks and joints in the walls of wooden buildings are common at fur-trade sites. Where the sites have burned at some time, as at Buckingham House and Fort White Earth, much of the chinking and plaster fuses to an almost indestructable hardness. The negative impressions of the timbers and joints which the chinking had covered are thus preserved.

In a preliminary study of these impressions by Mr. R. B. Lehne and J. S. Nicks evidence was found which confirmed what journals and other archaeological evidence had revealed about construction techniques

and, in addition, added some new facts. Confirmatory evidence at White Earth includes the negative impressions of the joints at which the filler logs were set into grooves in the upright posts. Chinking from both posts still bears traces of the white "mud" with which the houses were washed. Some of the White Earth chinking indicates this process was carried out three separate times. Very likely the job of "mudding" the houses was carried out by the men left inland each summer. Henry indicates suitable white mud was available at a lake about two miles away from the site (Coues, 1897:605). The only evidence as to how the whitewash coat was applied to buildings at both sites is the brush strokes which can be seen on the chinking. Some Buckingham specimens have coats of white mud up to 0.26 cm. thick.

At least one rather large and well preserved piece of chinking from Buckingham House demonstrates the use of vertical posts in building construction. It bears the imprint of the end of one timber abutting the side of another at right angles.

From the contours of impressions it is evident that both rounded and squared timbers were used in the construction of buildings at the earlier post. At Edmonton House III square logs were used. Also at the 1810 post, impressions in the chinking reveal that tenons were formed at the ends of the filler logs by first sawing into the log to the required depth and then wedging off unwanted pieces.

The temper used in the chinking proved to be grass or reed fibre such as would have readily been available around the many sloughs at both sites. The Buckingham chinking has, in addition, a considerable quantity of coarse sandy grit temper.

The initial study of construction details as recorded in

composition of and impressions left in fired mud chinking suggests much more could be done. For example, where the provenience of the chinking was recorded in feature 35, it was possible to pick out the probable locations of windows and doors. To achieve the very best information from mud chinking it should at least be measured in and preferably it should be studied while in situ.

CHAPTER IV

TOWARD A TRAIT LIST FOR THE NORTH SASKATCHEWAN IN THE LATE EIGHTEENTH AND EARLY NINETEENTH CENTURIES

Not all sites of the historic period can be identified simply by recourse to documentary sources. For this reason an attempt is made in this chapter to bring together traits from archaeological investigations at positively identified sites which appear to be indicative of a specific company and/or period of time. The study is intentionally limited to the North Saskatchewan River, as it was felt the different historical conditions operative in other areas where major archaeological work has been done would lead to unnecessary complications. This course has been made viable by the availability of good information on a number of fur-trade sites on the north branch of the Saskatchewan.

In addition to data from Buckingham House and Fort White Earth the author has had access to the collections from Pine Island Fort, excavated by A. J. Ranere for the Saskatchewan Department of Natural Resources in 1966, and Fort George, excavated by R. S. Kidd under the auspices of the Provincial Museum and Archives of Alberta between 1965 and 1967. The former post was built by Peter Pangman for the short-lived Gregory McLeod concern in 1786, and from 1787 to 1794 was operated by the North West Company. Fort George was established in 1792 by Angus Shaw for the North West Company, and along with its neighbour, Buckingham House, was apparently abandoned in 1800. The basic trait list has been based primarily on the four sites mentioned.

Archaeological work has been carried out at four other sites along the river, all of which for various reasons are deemed unsuitable

for the establishment of trait lists. Some references will be made to the results of the Fort Carlton project conducted by the Saskatchewan Department of Natural Resources from 1964 to 1967. The site was continuously occupied for 75 years from its establishment in 1810, and subsequent cultivation has further confused the situation. The preliminary report by Ranere contains some valuable information about the evolution of building styles and construction techniques, but no attempt has yet been made to analyze the vast artifact collection.

The precise identity of the other three sites has not as yet been established beyond reasonable doubt. For this reason the tentative trait list will be used to check the interpretations of Barka's excavations near Prince Albert (Barka, n.d.), Kidd's 1967 test at the site of the first Edmonton-Augustus posts, and Noble's work at one of the fort sites in the vicinity of the town of Rocky Mountain House. Barka's site had many problems. At the former confluence of the Sturgeon River and the North Saskatchewan, just west of Prince Albert or in its vicinity, there were at least five posts operated by Montreal pedlars, the North West Company, and the Hudson's Bay Company between 1776 and 1805. To complicate matters further, the Sturgeon River has undergone recent changes in course, and the North Saskatchewan has actively eroded its banks in this area. Kidd's test near Fort Saskatchewan recovered a modest amount of data insufficient to establish the identity of the particular post being excavated, Edmonton House or Fort Augustus. And near Rocky Mountain House, Noble faced the problem of deciding which of four posts occupied between 1799 and 1861 by both the North West Company and the Hudson's Bay Company he had excavated.

These three cases illustrate that even the best documented

sites can still present major problems of identification. The problem is much greater in smaller sites for which few documents exist. Many outposts existed, but to date little archaeological work has been expended on them. The possible site of Nelson House, operated as an outpost from Edmonton House from 1799 to 1801, was located near the mouth of the Wabamun in a survey by the author. At least three other outposts operated by the North West Company and rival Canadian companies were in the same area, a situation which makes it impossible to make a positive identification on documentary evidence alone.

The existence of less substantial sites is suggested in the journals of Buckingham House and other similar sources. Frequently some of the men at a fort moved out to the plains for the winter months where they could hunt for themselves and thus relieve strain on the post's supplies. Usually there was attached to a post a "hunting tent" which served the hired hunter, usually an Indian, as a base camp. Numerous journal entries indicate that encampments were made for a few days when men went out to collect pitch, bark, and wood for canoe and boat building. There would also have been innumerable overnight encampments along routes followed by the men as they travelled from one post to another, but as these were of such short duration there would be little left to identify.

A major class of sites would be those occupied by Indians who dealt with the traders. A quick survey of the Buckingham House journals reveals that large groups of Indians coming to trade would camp near the post for three or four nights while bartering and the accompanying ceremonies, including much drinking, took place. Many sites of this sort should be found both in the near vicinity of the post and on the

opposite bank of the river. There are a number of references to the traders ferrying the natives to and from the post to trade. A well developed trait list of historic artifacts common to the area would be extremely valuable in helping to interpret any Indian sites within the trading area which contain historic material.

A special type of site occasionally encountered could be either Indian or European in origin. Historic burials have been found and excavated in a number of sites in Alberta, including some near the presumed site of Edmonton House II and IV and the latest site of Rocky Mountain House.

Of all of these types of sites, certainly those used as posts or outposts offer the greatest scope for archaeological research. The following discussion of architectural traits is really only pertinent to such sites.

Architectural Traits

Only four of the eight historical sites discussed in this chapter have yielded extensive data concerning building methods and styles. Nevertheless, the information they provide is enough to suggest that much that has been written about building styles of the North West and Hudson's Bay Companies is oversimplified, if not incorrect.

Barbeau (1945) stated that posts-on-sill construction was the common method used by the North West Company and, at a later date, which he did not define, by the Hudson's Bay Company. He also indicates that pieux en terre--piles in the ground--construction was occasionally used, but unfortunately does not define what he means by the term.

Garth (cited by Noble, n.d.), in an article written in 1947,

states that post-in-ground construction is distinctive of Hudson's Bay Company posts. On the basis of Garth's article Noble interpreted the archaeological evidence for at least two building styles to mean two companies had been present, and that the Hudson's Bay Company had been responsible for the second occupation, as post-in-ground structures appeared to have been imposed over earlier structures.

Results from excavations at other sites do not, however, substantiate the clear distinctions made by Garth. Post-in-ground construction was used at both Canadian and English posts prior to the union of the two in 1821. It was found at Pine Island Fort and at La Montee, the North West Company rival to Carlton House occupied from 1810 to 1816. Its use at Edmonton House III has already been discussed.

The presence of more than one architectural style does not necessarily indicate the presence of different companies. At Pine Island there is evidence that an above-ground style employing squared sill logs laid directly on the ground was used as well as the post-in-ground method. Conversely, the Hudson's Bay Company at the first Carlton House used at least two styles of bastion construction, that referred to by Noble as en pile in which the bastion was no more than an extension of the palisade, as well as a post-in-ground structure very similar to that built by Alexander Henry for the North West Company at White Earth.

Although it is not possible at present to point to any building styles which can be used to differentiate between the two main companies, the amount and quality of the information available does not allow a conclusion that there were no differences. Further work is necessary, particularly in posts built in the late eighteenth century,

in order to trace the development of the different styles used and the possible diffusion from one company to the other.

While architectural style cannot safely be used as a diagnostic tool under the existing state of knowledge, some subtle differences in construction details may be significant.

At Pine Island post of the North West Company there was a demonstrable tendency to build on a basic unit of two feet. Two apartments proved to measure 16 feet square; a third, only partially excavated, was 12 feet wide. One large cellar was 12 feet by 14 feet, and a small storage hole two feet by four feet. The floor joists were set at four foot intervals.

In contrast, at Edmonton House III there was a tendency to use measurements which were multiples of three feet or eighteen inches. Perhaps many of the distances were simply paced off. Feature 33 was 21 feet wide and had joists set on $4\frac{1}{2}$ foot centers. Feature 34 measured 20 feet by 20 feet from center to center or close to 21 feet square in outside measurement. Joists were again set at $4\frac{1}{2}$ foot intervals. The main house, feature 35, measured 27 x 54 feet. Wall posts were set $10\frac{1}{2}$ feet apart, and three joists were at three foot intervals. Finally, in feature 40 no outside dimensions were obtained, but floor joists were placed at $4\frac{1}{2}$ foot intervals.

It seems possible that the Hudson's Bay Company and the North West Company used different modules. The hypothesis needs to be checked, however, in as many fur-trade sites as are excavated. If shown to be a consistent tendency, the modules might be of aid in identification of remains believed to belong to one or other of the two companies. It is interesting to note that five of the seven building structures excavated

by Noble appear to be based on a three foot module. Unfortunately, the measurements given in the text of his report are not entirely consistent with his plan view map of the site; nor are his measurements taken consistently as outside, center to center, or inside dimensions. Kidd's test near Fort Saskatchewan in 1967 uncovered only one major structural feature. Three parallel timbers which appear to be floor joists were placed at three foot intervals. The building with which they were associated was probably built with the post-in-ground method of construction. The artifactual evidence, although slim, points to occupation by the Hudson's Bay Company. It is thus tempting to suggest that this was the site of the first Edmonton House. The logical test in this instance would be to do further work at the site and attempt to locate the second post.

In concluding this discussion of construction methods there should be some recognition of the fact that not all the posts along the North Saskatchewan River belonged to the North West Company or the Hudson's Bay Company. In all probability the post that Barka excavated at Sturgeon River was built by several independent traders or pedlars in 1776, many of whom later became members of the North West Company. Between 1784 and 1804, four major Canadian rivals to the North West Company tried to win a fair share of the North West trade, only to fail in the end.

As yet, nothing is known of construction methods used by these other companies. Unfortunately, Barka discovered that most of the site he was excavating had been destroyed by the encroaching river and local relic collectors, and so was unable to gather much structural data. Since all of the pedlars and independent companies were based in Canada,

one might assume that they would have used construction methods similar to those used by the North West Company. Nevertheless, as many of them were unfamiliar with the way things were done in the Northwest it is conceivable they might have followed patterns more typical of other areas. Excavation of a representative sample of such sites will be necessary to provide the data needed for any firm conclusions.

Artifactual Traits

The many types of artifacts found in almost every historic site offer much greater scope for the development of a regional trait list. They are highly transportable, and therefore, unlike architectural details, are not limited to the relatively permanent sites inhabited mainly by Europeans. Those artifacts from Pine Island, Fort George, Buckingham House, and Fort White Earth which proved or promise to be of significance in developing a regional trait list are discussed in the following section. An idea of the potential artifact range in sites on the North Saskatchewan may be obtained by consulting the lists of goods ordered by York Factory in 1791 for shipment from England in 1792 and the goods actually charged against the account of the Saskatchewan Factory (Edmonton House) in 1810 (cf. Appendix VI).

Only a few categories of artifacts seem to be distinctive or diagnostic of either the North West Company or the Hudson's Bay Company. These included three important categories: buttons, ceramics, and trade silver.

In the collections of buttons there were two types of stamped designs which certainly originated with the Hudson's Bay Company, as

both contain elements of the Company's arms.* At Buckingham House and Edmonton House III there were buttons of a white metal, possibly pewter, with HBC in script letters within a circular buckled belt or garter, bearing the motto "Pro Pelle Cutem". The Company's crest, a fox seated on a "cap of maintenance", is placed above the belt. At Buckingham House there were three brass buttons on which were stamped a cross between four rather unconvincing beavers. It is interesting that one of these was found at the Fort Saskatchewan site excavated by Kidd in 1967. However, the fact that one was also found at Fort George emphasizes the desirability of having as many diagnostic traits as possible on which to base interpretations of identity or chronology of a particular site. The portability of such things as buttons, while it increases their distribution, decreases their reliability as diagnostic traits.

Ceramics found at corresponding posts of the North West Company and the Hudson's Bay Company are similar in all respects but one. At Pine Island, Fort George, and the North West Company post at White Earth sherds of Chinese hard paste porcelain were found. The largest sample came from White Earth, where the designs appear to be combinations of Nanking and Canton styles as defined by Mudge (1962:146). The North West Company itself was involved in direct trade with China as early as 1792 (Davidson, 1918:197), and its Montreal agents engaged in

*Blazon of the Hudson's Bay Company's arms:

Argent a cross gules between four beavers
sable.

Crest upon a cap of maintenance gules
turned up ermine, a fox sejant proper.

Supporters on either side, an elk proper.

Motto, Pro Pelle Cutem.

(Caywood, n.d.: Frontispiece)

it on their own behalf about the same time (HBC Archives, F/3/1, Alexander Henry to McTavish-Frobisher & Co., December 21, 1792). The lack of Chinese porcelain at Hudson's Bay Company sites cannot be explained by lack of availability of this commodity in England, as the British East India Company had shipped goods from China through most of the eighteenth century (Mudge, 1962:63). A letter from George Sutherland, Factor at Buckingham House in 1797-98, indicates that the Company had not been in the practice of shipping ceramics to the inland posts nor had previous Factors considered ceramics necessary (HBRS, 1967:126). To remedy this situation, he had carried in some "crockery" in his personal baggage. The rather large collection of ceramic sherds found at Edmonton House III suggests the situation had changed by 1810. The British East India Company, however, had stopped importing quantities of Chinese porcelain in 1801, partly due to an unfavourable market and partly because English ceramic industries were very active and protected by high tariffs (Mudge, 1962:125).


Trade silver is a third category of artifacts in which there are distinctions between the North West Company and the Hudson's Bay Company. It is a well documented fact that the North West Company obtained all the silver they required from Canadian silversmiths in Montreal and Quebec and that the chartered English company patronized English suppliers (see, for example, Langdon, 1966:19; Webster, 1967:11; and HBRS, 1967:114). Unfortunately, the present sample suggests it is not always easy to distinguish English from Canadian silver. Hallmarks provide the best evidence for the origin of a piece but were frequently not used, probably because the silver was not up to standard quality. Unfortunately, types and styles seem to have been widely standardized.

Silver brooch fragments found at Fort George and Edmonton House III proved to be identical in appearance. Similarly, a sunburst earring from the latter site is duplicated in a collection of Oneida silverwork made by Kelsey between 1887 and 1895 (Baerreis, 1950:81). Luckily, some of the Canadian pieces were marked. A large double-barred cross from Pine Island and a heart-shaped brooch from Fort George both bear the unmistakable script "RC", which was the mark of the Montreal silversmith, Robert Cruikshank, who was active from 1785 to 1809. One fragment of sheet silver from Fort George bears the legend "MONTREAL" which was used by a number of silversmiths from that place. Another cut piece contained part of a maker's stamp bearing the initial "J" or "P" in a rectangular cartouche which came from Fort George. None of the trade pieces from Edmonton House III had any marks with the possible exception of one large brooch which had the letter "M" crudely scratched on its back. A sterling silver spoon with a full set of hallmarks and a monogram "JB" on the handle was found at Edmonton House III. It was undoubtedly the private property of the Factor, James Bird, rather than a piece of trade silver.

In general it can be stated that any artifacts bearing maker's or supplier's marks are potentially useful in determining who the occupants of a site might have been. In the present samples such marks are present on metal tools, bale seals, buttons, clay pipes, and some gun parts. Little success has been realized in attempts to identify the referents of these marks.

File and rasp fragments frequently retain complete or partial marks. They were particularly frequent at Pine Island and Fort George, where blacksmith shops were among the excavated features. "COTTRELL",

or its variant "J.C.", is present at both sites. One Fort George file is marked "BB BURDEKIK" and a broken tang from Pine Island bears the partial mark "... EKI" Marks found only at Pine Island are "BIEN", associated with a stamped fleur de lis, and "... AWKE". At Fort George eleven file fragments were stamped "T. BRAMALL", one with three fleurs de lis, one "TC", and four "... CKSON", "... KSON", "... CKS ...", and "... SO ..." which may all be part of the same name.

Only two marked specimens were found on the site of Fort White Earth, both of which were surface finds. One bears the partial stamp "... KE" which might be part of a similar mark found at Pine Island. The second piece is marked "MV & Co .

Fort George was the only site which yielded marked tools other than files and rasps. Among these were an axe head stamped either "IC" or "IO", a straight razor with the mark "ACIER FOND" in conjunction with the inscription "ROME", and finally a knife blade fragment stamped "TEMAX".

Another potentially useful category was represented only at Fort White Earth. Many lead bale seals must have come into all of the posts every year, but few appear to have survived in their original form. It seems likely they were reused, either by melting them down for lead shot or to make little blankets used to hold the gunflints securely in the cocks or hammers. The two seals recovered from Edmonton House III are stamped with a suspended fleece within two concentric circles between which are parts of the legend "... N ... ALSA ..." on one and "... L SAGE H R ... ONDO.1" on the other. One broken disc from the surface in the North West Company area bears part of an inscription, " & C LONDON".

A few buttons have maker's marks stamped on the back, although this was apparently not a common practice until the 1830's (The Concise Encyclopedia of Antiques, Vol. 4, 1959:266). Two of the pewter "Pro Pelle Cutem" buttons from Edmonton House III are stamped with "WE////ALL:FI`MIN" and "I:~FIRMIN:~WE TALL/". Firmin and Company of London were established as button makers in 1677 and were still producing livery buttons in 1850 (The Concise Encyclopedia of Antiques, Vol. 4, 1959:266). The one button of this type from Buckingham House bore a faint inscription of which only two letters "... S ... I ..." are visible. One plain button from Edmonton House III has the legend "PLATED". This is a slogan denoting the button quality and is not necessarily indicative of a particular manufacturer or supplier (Olsen, 1963:552).

Clay pipes often bear initials and decorative motifs. In spite of the fact that much work has been done in tracing English clay pipe manufacturers it is still difficult to identify positively the makers of a sample from a given post. "TD" pipes are present at all four sites, although there do appear to be minor stylistic variations which may suggest they were not all made by the same manufacturer. According to the extensive but still incomplete list of pipemakers compiled by Oswald (1960), at least five makers probably used these initials. Although only one of these, Thomas Dormer of London, was active in the latter part of the eighteenth century, it may be that the initials were carried down through family lines or used by makers not strictly entitled to use them. A "WM" monogram was present in the collection from Pine Island as well as Buckingham House. Oswald (1960) lists some fifteen manufacturers with these initials. The most likely

in terms of period of activity were two Liverpool makers, William Morley and William Makin. It would be worthwhile to examine purchasing records of the Hudson's Bay Company and North West Company and their suppliers to see whether there is any record of the actual makers from whom their pipes came.

A final category of artifacts which may have some potential value in differentiating between the two companies is gun parts. The only parts which clearly are of value are the lock plates on which the maker's name was normally stamped. Company trademarks were often included as well. Proof marks were required to be stamped on the barrels, but heavy corrosion on all excavated specimens seen by the author has for all practical purposes destroyed this evidence. The only marked lockplate examined came from Pine Island and bore the name "GRICE". This was the name of a gunmaker whose period of activity came to an end sometime before the post was established (Hanson, 1955). Lists of gunmakers and lists of suppliers to the two companies are found in Gooding (1960:88-90) and Hanson (1955).

Throughout the period under consideration, both companies were using light but sturdy flintlock fusils, commonly called Northwest guns. Few differences appear to have existed between the basic style and the working parts employed by guns sold by the two companies. Indeed, it is not certain that even trademarks are a foolproof indication. In 1788 William Tomison complained that the Canadians were selling guns identical in marks and date to those sold by the Hudson's Bay Company. Such copying may have been quite widespread.

In conclusion, on the basis of the collections examined few artifacts can be securely assigned to one or the other company. There

may also be the problem that some of the smaller Canadian companies may have traded goods more or less identical to those used by the North West Company. Since referents of various manufacturers' marks and symbols are not easily obtainable, the best approach would be to make thorough records of goods found at securely identified sites which could be used to build up a significant list of traits for the region of the North Saskatchewan River. While such a list may use data from other areas to supplement the sample at hand, it is probably especially worthwhile to note the differences between assemblages of artifacts on the North Saskatchewan and in other areas.

Knowing which company's goods are present may identify the occupants of a site, but it is equally desirable to pinpoint it as closely in time as possible. The time span represented by the four most securely dated sites is relatively brief, only 27 years, and not surprisingly, little evidence for change in artifacts has been found. In discussing this topic, therefore, more attention has been directed toward those artifacts for which there is documented evidence for change in style or availability through time. Throughout, assessments are made of the way in which the artifacts being discussed fit recorded trends in manufacturing techniques or typologies based on studies in other regions.

Buttons provide information of chronological significance, even when maker's marks or distinctive decorations are not present. Olsen (1963) has presented a chronology for plain buttons based on a study of early American militia uniforms and some archaeological collections. The types he defines are based primarily on form, method of attachment, and materials used in their construction. The

collections being examined do have many of the same types as well as a number not covered by Olsen's study.

The two earliest types represented at Pine Island and Fort George, respectively, were regarded by Olsen as being in common use from the beginning of the eighteenth century. Pine Island's two-piece button with a metal body and bone back was common from 1700 to 1790. According to Perry (1959:266-67), it began to be superseded in manufacture by other types about 1770.

The much larger and more varied sample from Fort George should allow much closer dating. The most common were plain brass buttons with a spun back and brass eyes set into a boss in the center of the back. Used through the latter half of the eighteenth century, they were particularly common from 1760 to 1785. Perry (1959:268) points out that a patented process for stamping brass buttons superseded all other processes after the patent ran out in 1783. The earliest form represented from Fort George was basically cast in one piece of brass with a wedge-shaped shank. Olsen considered them to have been common from 1700 to 1765. Other dated types included one cast entirely out of white metal, common from 1750 to at least 1812, and another of white metal with an iron eye, used from 1760 to 1790. A few of the plain buttons from Fort George do not fit into the types defined by Olsen. Three were cast in one piece of brass with circular rather than wedge-shaped eyes. Three of the spun brass buttons had iron rather than brass eyes, and there were two fragments of spun silver buttons. These types undoubtedly correspond in period with the foregoing dated types.

The only type of plain button at Buckingham House was one with a spun brass body and brass eye similar to those most common at Fort

George. The decorated ones are probably also roughly dateable on the basis of form. The white metal "Pro Pelle Cutem" type fit generally into a form initiated about 1750, when the wedge-shaped shank of earlier pewter buttons began to be replaced by "a strong eye of brass wire fixed into the button during the casting process" (Perry, 1959:267). The process of impressing a design into the face of the button was initiated in the mid-1780's (Perry, 1959:267), a date which suggests these buttons must have been made after about 1785. The "beaver" buttons were of two types, a two-piece one, probably wood or bone backed similar to the type found at Pine Island, and a cast type, not identical with any of Olsen's types but probably typical of the latter part of the eighteenth century. On the basis of form it is tempting to suggest that this was a form of "livery" button which preceded the "Pro Pelle Cutem" type.

This last conclusion receives some support from the fact that pewter "livery" buttons are well represented from Fort White Earth, whereas "beaver" buttons are not present. Generally the types represented are not all that different from those found at the earlier sites. Brass buttons with a spun back continued to be popular despite the fact they were no longer common in other areas. Indeed, the only distinctly new type clearly dateable was two stamped brass buttons with soldered eyes, dated by Olsen (1963:552) as 1785-1800.

Clearly buttons can be very useful in dating sites, but certain traps await the unwary. Buttons were a common and lasting form of material culture widely distributed in the historic period. For some of these same reasons they can often be found in contexts considerably later than their period of manufacture would suggest. A look in any button box will illustrate the point. The types found at Edmonton House

III confirm it. Buttons presumably not in common use for 25 years were the most common at this site.

Ceramics are potentially very useful chronological indicators. Unfortunately, the identification of pastes, glazes, and designs requires considerable competence, especially with such small fragments as are represented in the present collections. Two points of chronological significance can be made on the basis of the four collections studied. First, the types of ceramics found seem to reflect closely the wares commonly used in Europe at the time the posts were occupied. This point is demonstrated in the analysis of ceramics from Fort White Earth included in Appendix I. Approximately 83 percent of the sample is creamware or pearlware which was extensively manufactured in England in the late eighteenth and early nineteenth centuries. Almost half of this sample was decorated with underglaze blue transfer printing, probably the most widespread technique in use in England at the time. The few sherds of Chinese porcelain appear to be typical of that available in Canton for export to the Western world. The salt glazed stoneware fragments represent varieties commonly available, although the thin walled white ware had largely been displaced by creamware by the end of the eighteenth century.

Unfortunately, this level of attribute analysis does not provide traits which can be used to date a site very closely. Very similar types of salt glazed stoneware are present at all four sites, and Chinese porcelain was at all of the North West Company sites considered. Some changes do take place, however, in the types of earthenware represented, very much in line with technological development of the pottery industry in England. At Pine Island the only

earthenware had a soft yellow paste and light blue tin glaze. This was a common utility ware of the mid-eighteenth century which had been fully replaced by harder and more durable lead glazed creamwares in the latter part of the century (Cloutier, personal communication, 1969).

The second point to be made about ceramics concerns the quantity represented at the posts. At Pine Island nine sherds and one small complete vessel were found. Only 55 sherds were found in three years of extensive excavation at Fort George, and 26 at Buckingham House. A total of 118 sherds were collected from the surface or excavated at Fort White Earth, 15 of these associated with the North West Company portion of the site. There thus appears to be a considerable increase in the amount of ceramics available inland during the span of time represented by the four posts. As already mentioned, there is documentary evidence that the Hudson's Bay Company was not supplying ceramics to Saskatchewan posts even as late as 1797. Further evidence for the trend occurs at Carlton House, occupied from 1810 to 1885, where sherds are so common that they litter the surface of the entire site.

Glass bottles of various types are represented at all four sites, and because of their susceptibility to breaking or being discarded when empty are potentially very useful as chronological markers. This fact has long been recognized by some archaeologists who use them to mark the limits of excavation before backfilling.

The significant chronological changes in the style of manufacture of green liquor bottles is discussed in several sources (for example, Quimby, 1966:74; Cotter, 1968:33-35). Only one known chronological attribute is well demonstrated in the present collection.

Two neck fragments from Edmonton House III and one from Pine Island show a double band around the neck, a broad one level with the orifice, and below this a narrower "string rim" beneath which a cord could be tied to secure a cork or other cover. The presence of the upper rim indicates that the bottles were made in the eighteenth century or later. Bottles with double rings from 1769 to 1793 are illustrated in Wills (1959: plate 159), and Quimby regarded them, as well as a type with a single rim close to the lip, as diagnostic of the late historic period (1760-1820) in the western Great Lakes area (1966:74).

Quimby also felt that small patent medicine bottles with round or square cross-sections, short necks, and flaring lips were characteristic of the same period. Similar bottles were represented by fragments at Pine Island, Fort George, and Buckingham House. Another type of medicine bottle, fiddle-shaped with the raised inscription "BY THE KINGS ROYAL PATENT GRANTED TO ROBT. TURLINGTON FOR HIS INVENTED BALSOM OF LIFE", was found to be diagnostic also of the late historic period. Several fragments were found at Fort George and one on the surface of Terre Blanche. There is documentary evidence that this medicine was also used by the Hudson's Bay Company (HBRS, 1967:24-25).

Trade silver can be used as a limited chronological indicator on the North Saskatchewan. This commodity was first used by the North West Company as soon as it was formed and by the independent pedlars perhaps as early as 1760 (Webster, 1967:11; Quimby, 1966:91), and therefore could be expected at any Canadian site in the area. The Hudson's Bay Company did not begin to use trade silver until 1790, and thus their earliest sites in the area should be devoid of it (Langdon, 1966:20; Webster, 1967:11). It is interesting to note the discrepancy

between the small quantities of silver found at the Saskatchewan River posts and the large amounts found particularly in the Great Lakes area (Quimby, 1960: Chapter 7; Langdon, 1966). Silver was brought into the trade specifically for the Indian market (Webster, 1967:11), but the small amounts found in the West suggest it was the Indians of the Great Lakes who provided the greatest market.

The potential usefulness of glass trade beads as time indicators has attracted a great deal of attention because of their wide range in time and space. In spite of this interest, researchers have been unable to agree on a universal scheme of significant criteria for the analysis of beads. The four most often used are method of manufacture, colour, decoration, and size. Analysis based on these criteria is still inadequate to trace bead types to their sources of manufacture, as styles made in different factories were much the same. Van der Sleen (1963) has initiated chemical analysis of bead samples from excavated factory sites, an analysis which provides information about the properties of glass used. For example, he has found that Venetian beads were nearly always made of soda glass, and beads from Amsterdam were mainly potash glass. Few complementary studies involving chemical analysis of beads from North American sites have been carried out.

In terms of method of manufacture the great majority of beads from Pine Island, Fort George, Buckingham House, and Fort White Earth are all made of drawn tubing. Mandrel or wire wound beads, the main if not the only other method represented, account for less than one percent of all four samples. Among the beads of drawn tubing are some made of two or more concentric layers of glass. The most common are white beads

composed of layers of white or white and transparent glass. A fairly common variety has an opaque brick-red exterior and a clear to green transparent core, commonly called Cornaline d'Allepo.

A wide range of colours and degrees of translucency are represented in the samples, as will be seen in the lists of types for Edmonton House III and Buckingham House in the appendices. The predominant colours at all four sites are medium blue translucent beads which appear aqua with transmitted light and the various categories of white beads. The prevalence of these beads, and indeed of beads of drawn tubing, may reflect preferences on the part of native buyers. The Earl of Southesk found the Indians trading at Carlton House in 1859 to be discerning in the matter of beads.

It amused me to see that fashion reigned here as imperiously as in more civilized lands; some fine, richly-coloured oval beads, the size of pigeon's eggs, which a year or two ago would have been generally admired, were despised and out of date, while the little trashy white ones, no bigger than a pin's head, were highly appreciated. (Southesk, 1969:124)

Very few beads are decorated. A few small white beads of drawn tubing in the Pine Island, Fort George, and Buckingham House collections have fine longitudinal stripes of red, blue, green and yellow in different combinations. A single tubular bead of translucent sky blue glass with longitudinal white pin stripes was found at Edmonton House III. A few of the mandrel wound beads are inlaid with leaf or wreath designs, or have brightly coloured polka dots applied to the surface. The former types, with opaque white or translucent bodies, are known at Pine Island, Fort George, and Buckingham House. The latter type, sometimes referred to as "Kitty Fisher's Eyes", has blue or white

backgrounds, and was found at Pine Island and Fort George. One specimen of a third type, a star or chevron bead, was found at Buckingham House. Typical specimens of this type are illustrated by Orchard (1929: Pl. XII).

Shell beads were present only at Fort George. The 36 white tubular beads with purple mottling fit very well Orchard's definition of wampum, "... small cylindrical shell beads, averaging about a quarter of an inch in length by an eighth of an inch in diameter ... made in two colors, white and purple" (1929:61). Although no wampum was found at the English sites, there is documentary evidence to suggest it may have been traded by them at Edmonton House I (HBRS, 1967:114). The Bungee or Ojibwa Indians who traded for wampum at Edmonton House evidently used it for ornamentation rather than currency.

The similarities between the samples being compared far outweigh the differences. There was apparently little change in the vast majority of the beads available on the North Saskatchewan River from 1786 to 1813. This was particularly true for the monochrome drawn tubing beads which make up most of the sample. There are some differences--35 grey-blue beads of this type were found at Buckingham House and none at Fort White Earth (Type 3 in bead analysis chart)--but present samples from these sites are too small to be certain indications of the variety originally available at either site.

With other types of beads, certain trends may be significant. All but one of the polychrome beads, whether made of drawn tubing or mandrel wound, came from the three eighteenth century sites. Although this distribution might be due to inadequate sampling of the White Earth site, the Edmonton House Accounts for 1810 suggest otherwise (see

Appendix VI). The only beads brought in were described as "common" in assorted colours. The one fancy bead found at Buckingham House could have been left over from an earlier period.

The large monochrome spherical beads found at Edmonton House III are not represented from the earlier sites. These beads were probably the so-called China beads commonly found in early nineteenth century sites, particularly in the Columbia River valley (Woodward, 1965:14-15).

In summary, fancy or decorated beads with stripes, wreaths and dot patterns as described above are probably diagnostic of late eighteenth century sites on the North Saskatchewan River, while large spherical blue and white beads date from the early nineteenth century. More excavations of sites of the latter period are necessary to test this hypothesis.

Although in many respects the types of beads from these sites parallel those regarded by Quimby (1966) as diagnostic of the late historic period in the western Great Lakes, the differences are also marked. Most of the beads in both areas were monochrome drawn tubular beads. The two decorated beads regarded by Quimby as diagnostic of the period, mandrel wound beads with a wreath pattern and spheroidal beads decorated with coloured dots, were present on the Saskatchewan as well.

Some types found at the four sites were not regarded by Quimby as characteristic of the late period. Chevron beads were common in seventeenth century sites farther east, and the presence of one at Buckingham House may well be anachronistic. The large tubular beads found at all four sites raise a more serious question. These or something similar to them were regarded as diagnostic of the seventeenth

century also. Their relative frequency, especially at Pine Island and Fort George, suggests they were not simple antiques. Perhaps local Indian tastes sparked a revival of a type no longer desired in other areas. Differences in tastes or carry-over may also explain the presence of the small striped beads of drawn tubing regarded by Quimby as typical of the middle historic period (1670-1760) in the western Great Lakes.

Some major types regarded by Quimby as typical of the late period (1760-1820) are completely absent on the Saskatchewan. The absence of imitation wampum, small white and purple tubular or "bugle" glass beads, can probably be attributed to the fact that the Western Indians had not acquired any taste for wampum and the Eastern ones who had moved West would not accept an imitation as long as they could get the real thing. Facetted beads, considered by Quimby to be very common in this period, were not present in the sample examined.

Finally, a few comments are pertinent concerning the sizes of the drawn tubing beads which were, and still are, used mainly in embroidery work. It is common to distinguish between beads of "seed" and "pony" size, the former being less than 2 mm. in diameter and the latter greater than 3 mm. in diameter (Conn, n.d.; Murray, 1964). Conn points out the need to recognize an intermediate size between 2 mm. and 3 mm., for after all the manufacturing technique used resulted in a continuous range of sizes.

Since the 1940's there has been a concept of a "pony bead period" applied to the Plains and Plateau Indians from the time of the introduction of embroidery beads until about the middle of the nineteenth century. The assumption behind the concept, supported by informants'

testimony, was that during this period none of the small seed beads, so popular in the latest historic period, were available in the Northwest. Conn has challenged this assumption on the basis of archaeological, ethnographic, and experimental evidence. Briefly, he has pointed out that at some archaeological sites and on some ethnographic items of this period seed and intermediate-sized beads are found. Experiments with techniques of bead embroidery suggested that the larger pony beads were better adapted to native sewing techniques with sinew and awl, and that to work effectively with seed beads needles and possibly thread are required. Thus, the "pony bead period" is only applicable if understood to be the time in which these larger beads predominated.

The fur-trading sites on the North Saskatchewan were closely associated with Indians of the northern plains, especially in the period being discussed. Unfortunately, the huge sample of beads suitable for embroidery found at Fort George has not been sized. The other three collections have yielded the following distribution of sizes.

	<u>Pine Island</u>		<u>Buckingham</u>		<u>Edmonton House III</u>	
Seed	2	0.2%	4	0.7%	2	0.3%
Intermediate	177	19.1%	80	13.4%	63	9.1%
Pony	844	80.7%	511	85.9%	625	90.6%

While the few seed beads present are hardly convincing, the numbers of intermediate size are more impressive. Certainly it would appear that embroidery beads were available in a range of sizes, and that selection for one over another was, as Conn argues, probably a function of taste and technology rather than availability. The virtual absence of the smallest range of beads probably reflects the traders' knowledge of the types of beads desired by the Indians.

Clay pipes, like glass beads, have been afforded extensive

study by researchers interested in building artifact chronologies. Their extensive use by traders and to a lesser degree Indians, plus their great fragility, make them ideal objects to study, as they were widely transported and were short-lived.* Among the attributes of clay pipes studied have been makers' marks and motifs (Atkinson, 1958; Oswald, 1955, 1960; Oswald and James, 1955; Walker, 1967; Wylie, 1969), bowl shape and capacity (Oswald, 1955; Walker, 1967; Wylie, 1969), changes in diameter at the mouth of the bowl (Wylie, 1969), relationship of lip of bowl to the plane of stem (Oswald, 1955), stem length (Harrington, 1954; Walker, 1967), stem thickness (Walker, 1967), and diameter of the stem bore (Harrington, 1954; Binford, 1962, Noël Hume, 1963).

All clay pipe fragments from the present sites are assumed to be of English manufacture either because they were supplied by the Hudson's Bay Company, or because bowl shapes and makers' marks, when present, are known to be of English origin.

*Excerpts from a letter written at York Fort in 1739 by James Isham indicate the fragility of clay pipes and also their use in the trade: "Pipes ... broke when we receive them ... for in eighteen gross received from England, we shall not have much above twelve gross, the rest being so short that they are of no service. With submission to your honours, if they was put in a cask or larger boxes with more straw between each lay, it would preserve them very much from being broke" (HBRS, 1965:282).

Their use by the Indians is indicated in the same letter: "Pipes is great encouragement to Indians especially leading Indians, for when they come with a gang of Indians, we give them a pipe and pipe of tobacco, which they are extremely thankful for ..." (*ibid.*:282). The importance of pipes to the men conducting the trade is illustrated by the custom of the voyageurs of resting every two hours to refill their pipes. It became "more common for them to describe distances by so many pipes, than in any other way" (Landmann, Adventures and Recollections, 1852, as cited in Davidson, 1918:218-19).

The potential use of makers' marks to differentiate between companies has already been discussed. Certainly the marks are also useful for placing a site in a period of time. Many problems arise, however. If the sample is from a site of unknown date, it may not be possible to date the artifact and site very closely because many initials, for example "TD", were used over long periods of time or by more than one manufacturer. The Research Division of the National Historic Sites Service is engaged in an ongoing study of kaolin pipes which involves careful analysis of archaeological specimens, coding of attributes, and accumulation of a "Decoration Book" in which all makers' marks, motifs, and stem decorations will be illustrated. This study should ultimately lead to a valuable resource file for identification of archaeological specimens. Photographs of the Buckingham House, Pine Island, and White Earth monogrammed specimens have been supplied to the artifact analyst in charge of this project, but results are not yet available. Of course there is a major problem with this approach in that most English clay pipes were not marked.

Criteria relating to the pipe bowls are actually of relatively little use in the Northwest, as whole bowls, or even decent-sized sherds, are very rare. These criteria have been isolated at large colonial or military sites, for example, Jamestown, Williamsburg, and Louisbourg, which were more densely occupied and within much easier reach of supplies of new pipes than an inland trading post. At Pine Island, Fort George, and White Earth several pipe fragments were found in which less than two inches of stem remained attached to the bowl. The short stem was either whittled or filed as if to accommodate a makeshift wooden stem. The one complete bowl from Buckingham House had broken from the

stem right at the bowl; hence, no new stem could be fitted. This evidence suggests that clay pipes were rare inland, and hence used until there was no possibility of affixing a new stem or until the bowl itself broke. Difficulty in transporting the pipes was probably the main factor, as the Hudson's Bay Company sold pipes to its servants for only 4d. per dozen in 1782 (Alexander Graham's Observations in HBC Archives, E/2/13, Reel 4M3).

If bowls and bowl fragments are rare, stem fragments are usually well represented at inland posts. No complete stems were found at the sites discussed in this thesis. Harrington (1954) indicates that lengths of pipe stems did vary through time in a cyclical fashion from a short six to eight inches in the early seventeenth century to a considerably longer length in the eighteenth century and then short again from the late eighteenth century into the nineteenth. The list of goods brought into the Saskatchewan Factory in 1810-11 (Appendix VI) indicates that "short" pipes were provided. The smaller varieties would certainly have been more transportable.

Stem thickness is rather meaningless for the present sample since most fragments are from some indeterminate part of a tapering stem.

The last criterion, diameter of stem bore, was used as the basis for extensive analysis of samples from all four Saskatchewan sites. Harrington (1954) was the first to demonstrate a regular decrease in the size of stem hole diameters correlative with the increasing stem lengths through the seventeenth and eighteenth centuries at colonial sites in the eastern part of the United States. He designated five periods, each characterized by a preponderance of one bore size, viz:

<u>Period</u>	<u>Bore Diameter in 1/64"</u>
1620-1650	8
1650-1680	7
1680-1710	6
1710-1750	5
1750-1800	4

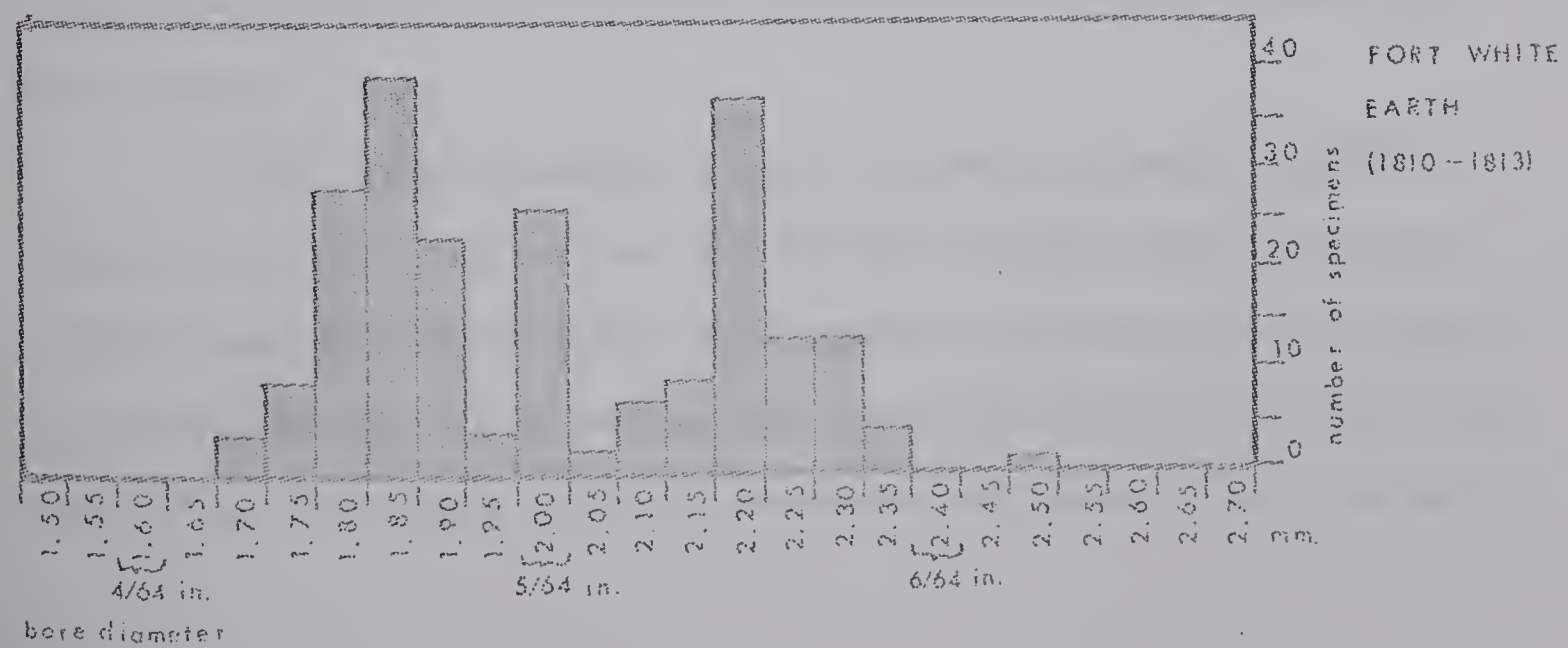
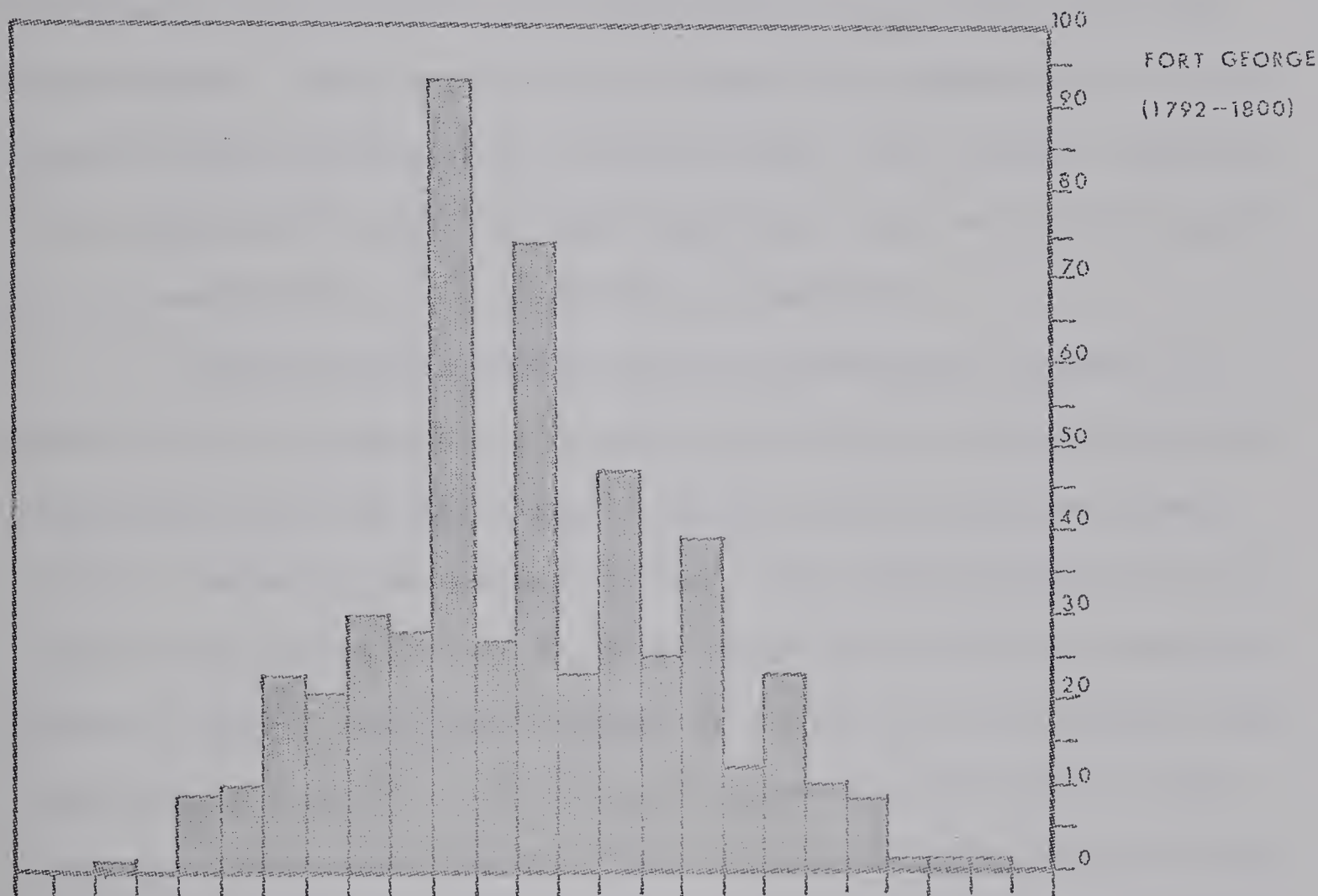
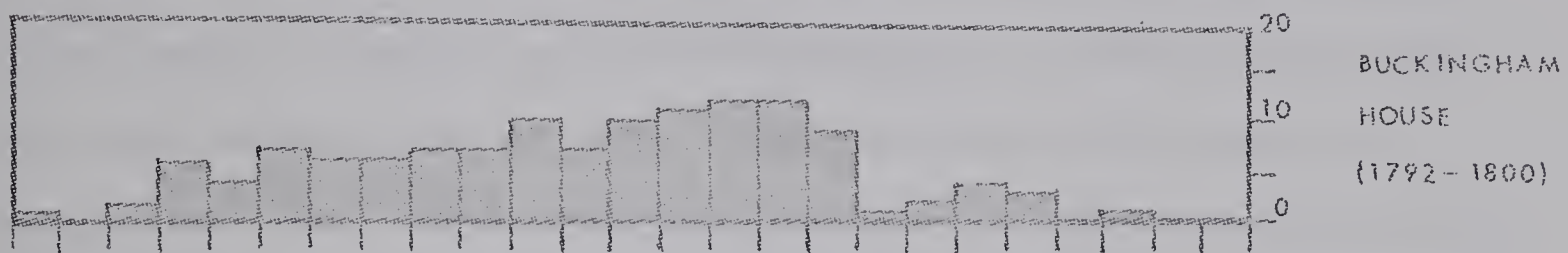
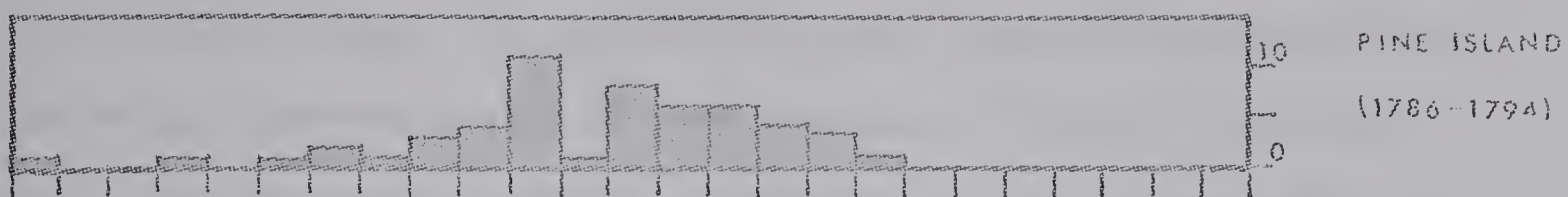
Binford "... computed from Harrington's percentages a straight line regression and arrived at a formula which would allow me to substitute values from any archaeological sample into the formula and determine an absolute date which would be the mean date for the period of sample accumulation" (Binford, 1962:19). The formula is: $Y = 1931.85 - 38.26X$, where Y is the date to be determined; 1931.85 is the theoretical date, if the correlation is projected, at which the stem hole diameters would reach zero; 38.26 represents the slope of the regression line; and X equals the mean of the measurements of hole diameters for the sample in question.

Analysis of the present samples was initially undertaken under the assumption that the Harrington-Binford method really was valid to 1800, a dating which would include Pine Island, Fort George, and Buckingham House.* Results on samples from these posts of 53, 506, and 128 specimens respectively did not bear out the validity of the method, for the North Saskatchewan in the late eighteenth century. Calculations based on 211 stem fragments from White Earth likewise did not agree with the known date of occupation.

The distributions of bore sizes for each sample are illustrated in Fig. 17. The bores were measured using vernier calipers,

*Binford's original article (1962) was not available when this analysis was initiated.

Fig. 17: DIAMETERS OF KAOLIN PIPE STEM BORES.



and the metric value assigned each specimen is either a mode or average of four measurements. Originally Harrington used drill bits which are gauged in sixty-fourths of an inch, and the correlation between his values and the metric values is indicated. It is of interest to note that there is a rather continuous distribution of sizes in each sample but that certain peaks do occur. Interpretation at the moment is speculative, but it does seem possible that the departures from a normal distribution might be due to the pipes being purchased from only a few manufacturers. Peaks may be due to a degree of standardization in the gauges of wire piercers used to form the bores. The trimodal character of the distribution curve for White Earth pipe stems may be due in part to the exceptionally short occupation of that site.

The pipe stem diameters would, in Harrington's schema, be indicative of an occupation date near the end of the 1710-1750 period or beginning of the 1750-1800 period, with White Earth being the latest. Binford's formula gives similar results. Pine Island yielded a date of 1750.11; Fort George of 1747.29; Buckingham House of 1751.26; and White Earth of 1758.92. The dates are clearly too early, out of sequence, and bunched far too closely. The range of variation in bore sizes in the four sites is obviously narrow. The trend towards diminishing the size of the bore appears to have ended sometime prior to the occupation of Pine Island.

This finding confirms a basic limitation Binford himself pointed out in his original article (Binford, 1962), namely, that the method breaks down about 1780. More recent applications of the method in the Eastern part of Canada and the United States have confirmed this limitation, and in some sites the breakdown was found to occur as early

as the 1760's (South, 1962; Wylie, 1969). In earlier sites the method works well, although here too, as with any statistical method, there can be pitfalls for those who attempt to apply the method without understanding the assumptions upon which it is based. Provided that the deposit from which the sample came is early enough, it is necessary that three further conditions be met: the sample must be random; the sample must be representative; and the conditions under which the deposit was formed must be known (Binford, 1962:21). The predominance of one source of supply has been found to skew results in that the sample being measured is not as random as those upon which the method was developed (Wylie, 1969). Without a relatively large sample, one cannot be sure the sample is representative. In tests of the method on material from Williamsburg, Audrey Noël Hume found that samples of 900 to 1000 were required before stable results could be assured (Noël Hume, 1963). Nevertheless, very small samples can give good results; for example, only 25 were adequate to date a building at Fort Gaspareau where the time of occupation was short (Wylie, 1969). Further, a major problem can develop if the rate of deposition during the occupation of a site is not constant. In such cases the date will be skewed towards the period of maximum deposition. Knowledge of the conditions under which they were deposited, for example, changes in population through time, is necessary to correct for this factor (Binford, 1962).

The foregoing discussion has presented the main lines of research pursued in attempts to define chronologically significant artifact traits. Certainly not all types of artifacts which were found have been considered. Some should be potentially quite useful as time indicators, for example, all those bearing makers' marks. These have

already been discussed above. Gun parts and accessories, too, might be of use, but only two samples of any size were available for examination. Therefore, research on these artifacts has gone no further than a few major published sources (Hanson, 1955; articles in Missouri Archaeologist, Vol. 22, 1960).

Most of the gunflints and gunspalls found in the fort sites are too extensively used to determine whether there was secondary chipping on the heel as with the French flints or whether secondary retouch was omitted as with most English flints. There is evidence that the source of flints can be of chronological significance. The French type is almost universal in the western Great Lakes until at least 1760 (Quimby, 1966:75), and until sometime after 1800 on the Missouri (Hamilton, 1960:74).

All of the specimens from Pine Island and most from Fort George are gunspalls made on flakes rather than prismatic blades. This type is widely regarded to have predated the tabular flints. According to Quimby, they were characteristic of the middle historic period (1670-1760), but continued in use in some areas in the early part of the late period (Quimby, 1966:75). All those specimens which were complete enough for analysis had a gnawed round heel, a feature which suggests they were of French origin.

Most of the flints from Buckingham House and White Earth were tabular in form and made from prismatic blades. Examination of unused specimens suggests they were of English origin. This apparent difference between Canadian and English sites suggests that what may appear to be chronological changes are closely related to differences in trading patterns.

The dichotomy between black English flint and honey-coloured French flint considered as very important by Hamilton (1960) and others is not borne out by the samples excavated from sites along the North Saskatchewan River.

Finally, there is a considerable amount of metal, in particular hardware, at all four sites. These artifacts have not yet been thoroughly studied, either on the North Saskatchewan or in any other region. It is still possible in 1969 to title a conference paper, "History swings on a poorly described hinge" (Priess, n.d.). Iron nails are widely discussed in historic sites analyses. Their wide distribution in both time and space makes them potentially very useful. In the four sites being discussed all of the nails appear to be hand forged, a category of nails which provides little basis for chronological inference. From 1790, when machine-cut nails became available, a series of technological developments at relatively close intervals makes them quite useful time markers (Nelson, 1968). Modern wire nails began to be used in the 1850's, but neither machine-cut nor wire nails completely superseded older forms when they came into use. Thus, if various combinations of the three main types were found, only the earliest possible date could be determined with any precision. In the absence of knowledge of regional patterns of use any attempt to argue from the absence of certain types is unwise, as demonstrated by the fact that White Earth had no machine-cut nails, despite the fact they had been available and in use in other places for twenty years.

Summary

In this chapter architectural styles and various artifacts

recorded in archaeological excavations at four positively identified posts on the North Saskatchewan River have been reviewed and suggestions made as to the attributes which appear to be indicative of the North West or Hudson's Bay Company or of changes through time.

No evidence was found that either company could be distinguished on the basis of building style, but there is evidence that different modules may have been used. Further, only a few artifacts seemed to be exclusively associated with one company, Pro Pelle Cutem and "beaver" buttons with the Hudson's Bay Company, Chinese hard paste porcelain with the North West Company, and trade silver to either company as indicated by the presence of makers' marks.

At present the only artifact classes in which chronological trends were demonstrated within the four samples were beads and ceramics. Several other categories of artifacts, in addition to these two, have chronological implications in wider terms than the four sites on the Saskatchewan. Generally speaking, these artifacts--buttons, glass bottles, trade silver, kaolin pipes, gun flints, and nails--occur in their proper chronological context. The artifacts are mainly representative of goods currently available from manufacturers. This fact should not be surprising, as the traders travelled to their respective headquarters each spring and returned each fall with fresh supplies of trading goods. Numerous complaints by the English Factors about shortages of trading goods suggest that there was not much carry-over, especially in the most popular categories of goods. The tendency for some apparently anachronistic styles to turn up in the collections examined, especially in the button and bead collections, can be partly explained by the fact they are durable items which can be used for a

long time and even reused. The more common "early" types may represent customer preference to a degree. The importance of this factor is illustrated in a letter sent by James Isham, the Governor at York Fort, to the Governor and Committee of the "Honourable Company" in London listing trading goods with which the Indians had found fault. Mentioned are large pearl beads (colour and size unsatisfactory), kettles (bail fasteners were too weak and the large kettles too expensive), powder (disliked texture and colour), blankets (six to nine inches too short), cloth (weak, narrow, and thin), buttons (weak shanks), combs (weak), fire steels (inefficient), gunworms (short and too wide for the ramrod), French flints ("unshapeable" for a gun), yarn gloves (useless to both Indians and Company men), hatchets (too large), knives ("bad blades and worse handles"), tobacco tongs (Indians not interested in them), twine (weak and uneven), powder horns (too crooked and weak), and rings (too large). The beads, gloves and tobacco tongs were sent back to England, and with them went "... samples of most part which is pleasing to Indians, and most conducive to your honours' interest" (HBRS, 1965:278-80, letter dated July 20, 1739). In line with this realization a number of important types of trade goods were brought into production specifically to satisfy the needs and wants of native customers. Wampum and silver ornaments are two of the most important.

Many more sites of known date and affiliation obviously need to be excavated and analyzed before a very detailed trait list for the North Saskatchewan region can be defined. When attempting to date an unknown site from archaeological data, the best one can do is to follow Quimby's directive, "... one must consider the entire assemblage of objects ... the date of a given assemblage is the date of the youngest

trade (or any dated) object present" (1966:79).

Finally, the interpretations offered by Barka and Noble for the unidentified sites they excavated at Sturgeon River and Rocky Mountain House, respectively, are briefly examined in terms of the trait list thus far developed for the North Saskatchewan River area.

Evidence for architectural styles was lacking at Barka's site; hence, his interpretation is based on some historical documentation and on the artifacts recovered. While he marshalls an impressive amount of historical documentation to support his interpretation that the site was occupied by Canadian pedlars from 1776 to 1780, he at no time mentions the fact that there were four other posts at the mouth of the Sturgeon River between 1794 and 1805. Historically, there is no proof the site could not have been one of the later ones (Morton, Historical Geography of Western Canada).

None of the artifacts recovered at the site are specifically indicative of either an English or Canadian occupation. The dates derived from buttons, gunparts, gunflints, beads, bottles, ceramics and kaolin pipes are not incongruent with Barka's interpretation. The most important were the beads and pipe fragments.

Generally, the bead sample is very similar to samples from the three eighteenth century sites already discussed. But in place of mandrel wound beads with wreath and polka dot designs, there are mandrel wound beads with designs formed mainly of bands of contrasting colours. From his descriptions they appear to be similar to those illustrated by Orchard (1929: Pl. XIII) as being typical of those found on early ethnographic collections from the West, presumably mainly from the Missouri. Perhaps the difference here is due to the site being

associated with traders other than those of the Hudson's Bay Company and the North West Company rather than an indication of a time difference.

The only remaining positive evidence cited by Barka for a 1776-1780 occupation was a Binford date of 1772* obtained on a sample of 12 pieces of pipe stem. While it has been demonstrated that good dates can sometimes be obtained with very small samples, the reliability of such a date might not be very high. On the other hand, the date fits well with the dates assigned at Michilimackinac to the maker's initials and motif on two pipe bowl fragments. Although the method is not necessarily applicable after 1760, the date he obtained is not inconsistent with other data, and his interpretation of the site is reasonable. It is unfortunate that more evidence was not at his disposal to admit of a more positive identification.

Noble's interpretation of the Rocky Mountain House excavation is not entirely acceptable in the light of recently excavated sites. The relative positions of the four Rocky Mountain House posts which were occupied between 1799 and 1861 are not clear from the historical documents from these posts. Noble was, therefore, left with the archaeological evidence on which to attempt positive identification. He concluded that he had found the site of the first Rocky Mountain House constructed by the North West Company in 1799 and taken over by the Hudson's Bay Company upon amalgamation in 1821. The post was replaced by a new one in 1834.

His interpretation of the architectural evidence is in error

*Had his mathematics been correct, he would have obtained an even more impressive date of 1775.

insofar as he assumes that different styles necessarily mean that different companies were present and that post-in-ground construction was used exclusively by the Hudson's Bay Company. Unfortunately, the interpretation of the structural evidence is his primary basis for the identification of the post's occupants and the period of occupation.

The presence of eight Pro Pelle Cutem buttons is convincing evidence for a Hudson's Bay Company occupation. However, the proposed distinction between Hudson's Bay Company and North West Company styles of bail fasteners for brass and copper kettles, which is Noble's main artifactual evidence for a North West Company occupation, is not demonstrated in the four sites of known affiliation. Noble cites a personal communication from Walter Kenyon of the Royal Ontario Museum as the source for his information that North West Company and Hudson's Bay Company kettle lugs were stylistically different. One example of the sheet brass lugs with clipped or "dog-eared" corners was found at Edmonton House III, although this should have been a North West Company product. None of the spool-like Hudson's Bay Company type were found at any of the sites. More investigation of this class of artifact is necessary in order to determine whether there really are differences between the sources, or whether the differences are functional or perhaps of chronological significance as suggested by Quimby, who regarded the sheet brass lugs as being typical of the middle historic period, 1670-1760 (Quimby, 1966:69).

Chronologically, the artifacts from Noble's site tend to fit the earlier sites examined in some artifact groups, while comparing very well with Edmonton House III in others.

Button and ceramic types present are considered by Noble to be

too early, a situation which he regards as evidence for cultural lag and the "rudimentary" and "isolated" nature of the post. Comparison with other sites on the river suggests they were not out of context, although extension of the occupation date to 1834 would not be supported by these artifacts. If the site was occupied intermittently, as the historical records show, one would expect the artifacts deposited at any time to be fully representative of the time at which they were deposited, as there would be no carry-over of goods. The small sample of ceramics, all of which could be compared with those from late eighteenth century sites, could suggest it was not occupied to any late date, rather than that the post was isolated.

The bead sample is very similar in every respect to that from Edmonton House III. None of the types represented are necessarily any later in date. Indeed, the only artifact class that suggests occupation after 1821 is some nails classified by method of manufacturing as being post-1825. On the basis of photographs the identification appears questionable, but even supposing it to be accurate, the most recent information available on the evolution of nail making technology gives a beginning date of 1815 for the process (Nelson, 1968).

In conclusion, it would appear that on the basis of excavations since 1965 some of Noble's interpretations are no longer viable. The evidence for a North West Company occupation is unconvincing. Furthermore, evidence for occupation as late as 1834 is very inconclusive. Not only does the artifact assemblage appear too early, but there is very little evidence for repair and replacement of such structures as stockades. It is unlikely that pickets would last for 35 years! In sum one could argue with perhaps greater chance of being right that this

post was the site of the Hudson's Bay Company's Acton House established in 1799 and occupied intermittently until 1821.

APPENDIX I

ARTIFACT DESCRIPTIONS FOR THE WHITE EARTH TRADING POSTS

A. TOOLS AND HARDWARE

Brass Instrument Fragment

A broken mathematical instrument (H68.1.545) was retrieved in excavations along the median wall (feature 41) dividing the North West Company and Hudson's Bay Company areas (Plate 1c).

Originally the instrument consisted of two arms which were fastened, one sandwiched between two extensions of the other, in a pivot arrangement; thus the arms could be spread and closed in the manner of dividers or a compass. The arm split at its upper extremity to house the other has broken off about 2 cm. below the pivot point. The remaining arm is laminated with two strips of iron for the upper 3 cm. of its length. The lower 4 cm. are of solid brass along which are three shallow depressions (finger holds?) and an outward curve in the last centimeter. There is a short slit in the distal end.

A fragment of a similar curved arm was excavated at Fort George. Could the present example be a set of the carpenter's compasses listed in the Stores brought into "Saskatchewan Factory", i.e. Edmonton House, in the Account Book for 1810-1811 (HBC Archives, B/60/d/2^a, Reel IM467)?

Cut and Perforated Brass Sheet

H68.1.841 is a piece of sheet brass 0.1 cm. thick which originally was cut in a rectangular shape with rounded corners (Plate 1a). It is about 10 cm. long and 7.2 cm. wide. It has been folded over

the edge of some object(s) apparently about 2 cm. thick, and then fastened with two copper rivets which passed through the object and two perforations at opposite corners of the sheeting. The rivets are still retained in the perforations at one end. This fastening was broken by filing through the rivets, thus releasing one end of the brass. Currently the rivets are less than 2 cm. long and certainly smaller than the opposite perforations. The specimen is from feature 26.

Brass Lugs

The one heavy brass lug (H68.1.545) found came from the surface of the Hudson's Bay Company area (Plate 1j). The loop is 1 cm. thick and is set out at an angle from the thinner (0.6 cm.) "body" portion via which the lug was riveted to the vessel with at least one copper rivet which is still retained. Wear marks from the wire bail are visible on the upper part of the inner edge of the loop. Breaking along the edges of the body and of the interior end of the rivet suggests the lug was forcibly pried from the vessel to which it was attached.


H68.1.455 is part of a lug made from brass sheeting 0.1 cm. thick and is currently 3.6 cm. wide and 4.9 cm. long (Plate 1k). One end has broken across the large punched perforation which originally received one end of the bail. The remaining end has clipped corners and near these two small punched perforations for the rivets which secured the lug to a small brass kettle. Provenience is Hudson's Bay Company surface.

Steel File Fragments

The midsection of a double cut file (H68.1.50) came from feature 2 (Plate 1a). There is an average of eighteen cuts in one

direction and thirty in the opposite direction on one side of the file. Extensive corrosion of the opposite side has obliterated any trace of cuts. Thickness of the specimen is about 0.5 cm.

H68.1.296 is a file tang apparently cut off with a chisel (Plate 1b). It is now about 0.5 cm. thick. Provenience: feature 44.

H68.1.452 is a portion of a tanged, square shouldered, single cut file which has snapped across the blade near the tang end (Plate 1d). There are twenty-six cuts per inch. The mark "MV & Co.  " appears on the tang but as yet has not been identified. Total length of the fragment is 8.84 cm. of which two-thirds is made up by the tang. Width of the file at the shoulder is 2.15 cm., and it increases towards the broken end. The metal is 0.42 cm. thick. It is a surface find most closely associated with the Hudson's Bay Company.

H68.1.457 is a monogrammed file tang found on the surface of the Hudson's Bay Company post. It is 0.53 cm. thick (Plate 1e). The letters "... KE" are stamped near the broken end of the tang. A tang from the Pine Island collection bears the inscription "AWKE" and may have been made or supplied by the same person or company.

Iron Awl

A fine iron awl (H68.1.85) was found in situ in the cellar fill of feature 2 (Plate 1, 1). Part of the polished wooden covering on the handle was still in association with the awl when found. Judging by the height of the three rivets which held the wood on either side of the metal, the wooden covering originally was about 0.175 cm. in thickness. A small amount of wood still adhering around one rivet was removed after photographing to facilitate cleaning and preservation of the metal.

Below the handle section there is a short collar consisting of two raised bands and below this the tapering, cylindrical blade.

Dimensions of the awl:

Total length	14.135 cm.
Blade length	5.62 cm.
Handle length	8.265 cm.
Collar length	0.225 cm.
Handle width	1.265 cm., tapering to 0.7 cm.
Blade width	0.7 cm., tapering to a sharp point
Collar width	0.71 cm.

The three rivets to secure the wooden handle on either side are irregularly spaced as follows proceeding upwards from the collar: 1.3 cm. above collar; 2.7 cm. to second rivet; 3.1 cm. to third rivet; and from there 0.53 cm. to end of handle. As noted above the rivets are 0.175 cm. in height.

Iron Hinges

H68.1.871 is a broken hinge (Plate 1i). Maximum width is 2.7 cm. and present length is 2.8 cm.; however, an unknown length has snapped off. There are two deep loops slightly less in total width than the body of the hinge and separated by an equally deep but narrow gap. An iron bar 0.04 cm. in diameter and equal in length to the width of the loops is retained in one loop. Apparently one loop was forced open slightly and the rod pushed through, possibly to remove the hinge. Provenience for the specimen is feature 35.

H68.1.438 is one complete wing of a butterfly hinge approximately 8 cm. long (Plate 2r). It was found on the surface of the Hudson's Bay Company post. There are three holes, two square and one round, for nails or screws and one centrally placed loop. To make the hinge a double pattern was cut out of a single sheet which was then

folded over, leaving the loop, and blacksmith welded.

Iron Ferrule(?)

H66.327.243 is a deep closed U-shape piece of iron which has a blacksmith weld on the straight bar (Plate 1n). It resembles ferrules used to secure scythe blades to handles. Current measurements are 5.8 cm. long, 3.8 cm. wide or deep, and 0.4 cm. average width. Provenience for the specimen is the surface of the North West Company.

Staple (H68.1.384)

A very large staple made of flat iron stock came from feature 44 (Plate 1h). The stock tapers towards both ends, one of which is blunt and the other sharp and slightly twisted. Maximum dimensions are: length 9.6 cm., width of staple 3.445 cm. width of stock 0.71 cm., and thickness of stock 0.5 cm.

Perforated Iron Fragments

Several pieces of broken or cut iron have one or more perforations which suggest they were once used as fasteners or had something fastened to them. Some appear to be ad hoc inventions to satisfy functions which are not clear from the archaeological record; some are probably waste scraps from artifacts cut up and made into new tools. The specimens included are briefly described:

H65.321.30 is a short length of iron strap 2.8 cm. wide and 0.175 cm. thick with a single punched perforation (Plate 9k).
Provenience: the specimen was found on the surface of the site.

H66.190.77 is a short strip 3.8 cm. wide on which both corners of one end have been folded over (Plate 9g). There is a single square

perforation near the opposite cut end. The metal is 0.18 cm. thick. Provenience for the specimen is the surface of the site.

H66.327.244 is sub-triangular in outline and slightly curved lengthwise (Plate 9o). It is perforated by a single round hole. Originally the specimen would have been 0.35 cm. thick and more than 6.0 cm. in length. It may be part of a hinge or pintle. Provenience is feature 35.

H68.1.9A is made of strap 2.5 cm. wide and 0.165 cm. thick (Plate 9h). One end has broken across a large punched perforation. It was found on the surface of the site.

H68.1.107B consists of a thin flat portion with two small perforations and a narrower but thicker portion (Plate 9p). It is currently 8.7 cm. long, but appears broken at both ends. Likely there was some covering riveted over the flat section. Provenience is feature 32.

H68.1.874 is a piece of strap iron 2.65 cm. wide, 0.165 cm. thick, and 15 cm. long (Plate 2p). There are three evenly spaced punched perforations. A short length of one end is bent over in an acute angle. It was found in the cellar fill of feature 2.

H68.1.952 is of sub-rectangular outline and currently measures 6.625 cm. in length, 1.63 cm. in width and 0.2 cm. in thickness (Plate 9j). There is a semi-circular notch along one long edge. Two edges are bevelled as if cut with a cold chisel. It was found on the surface of the Hudson's Bay section of the post.

Iron Screwdriver(?)

This artifact (H68.1.901) was a surface find in the Hudson's

Bay section of the fort (Plate 1f). It appears to be a small "home made" screwdriver. One expanded and perforated end is cut from sheet 0.145 cm. thick. The shank is formed of folded over sheet which has been hammered out to produce a flat point. Total length of the specimen is 7 cm.

H65.321.36 is a thin spatula-shaped piece of iron which very much resembles a snapped-off spoon handle. It is presently 4.2 cm. long, 0.65 cm. to 1.15 cm. wide and 0.12 cm. thick. Provenience: the specimen was found on the surface of the site.

Spikes (Plate 3)

For the purposes of this classification it was arbitrarily decided that all nails with a minimum shank thickness greater than $6/32$ inch should be regarded as spikes. The ten complete specimens meeting this requirement varied in length from $3-3/4$ inches to 5 inches. Only two distinct shaft thicknesses were encountered. The heavier spikes were made from nailing stock measuring $9/32$ inch by $9/32$ inch in cross section. A lighter variety appeared to have been made from stock measuring $6/32$ inch by $7/32$ inch. From these two basic stocks were made six different types of spikes in a variety of sizes.

Type S1: This type was manufactured with stock measuring $9/32$ inch by $9/32$ inch with a broad, well-made rose-head and a sharp point. Five specimens were included, one of 5 inches, three of $4\frac{1}{2}$ inches and one of 4 inches length.

Type S2: Also manufactured from stock $9/32$ inch by $9/32$ inch with a broad well-made rose-head and a spear point. There is only one such specimen of 5 inches length.

Type S3: Two specimens, both 3-3/4 inches in length, are made from stock measuring 9/32 inch by 9/32 inch with a crudely made offset head and a sharp point. Both specimens show evidence of having been clinched and were found together near the northwest corner of feature 44.

Type S4: Four specimens, one 3-3/4 inches long and three broken, are made from stock measuring 6/32 inch by 7/32 inch with small high rose-heads and a blunt point.

Type S5: One spike, 4½ inches long, is manufactured from stock measuring 6/32 inch by 7/32 inch. The head appears to be of no special form. It has been slightly mushroomed through use. The point is of the sharp type.

In addition to the above there are four shaft fragments of spike size.

Common Nails

Two major categories are classified on the basis of head type, viz. true rose-head distinguished as having been formed by a minimum of four hammer blows in such a way as to form a faceted dome-shaped head projecting in all directions beyond the shank, and upset head formed by fewer than four distinguishable hammer blows producing a head distinctly skewed in one or more directions. The predominant stock size used in both cases appears to have measured approximately 5/32 inch by 6/32 inch. Only variation from this stock size will be noted below.

Type R1: This type has a rose-head and a sharp point. Six specimens are included: one 3-3/4 inches long, four 2½ inches long (one of this length has a shank 6/32 inch by 6/32 inch and one has a shank of

5/32 inch by 5/32 inch), and one $2\frac{1}{4}$ inches long. All four of the $2\frac{1}{2}$ inch nails have been clinched.

Type R2: A rose-head and a blunt point distinguish this type. In four of six cases the point has been bevelled on one or more sides. Two nails are $1\frac{3}{4}$ inches long, three are 2 inches long, and two are $2\frac{1}{2}$ inches long.

Type R3: Again a rose-head but on a shank measuring 5/32 inch by 7/32 inch and with a well formed spear point. There is only a single 3 inch long specimen of this type.

Type R4: The one nail in this category has a flat rose-head formed on a round shank, 6/32 inch in diameter, which is squared off 1/8 inch below the head and drawn down to a sharp point for the last 5/8 inch. Length of the nail is $1\frac{3}{4}$ inches.

Type R5: One specimen 2 inches long has a broken rose-head and a chisel point. It is made from stock measuring 2/32 inch by 5/32 inch.

Twenty-two incomplete nails have rose-heads. They are made from several different sizes of stock, viz.: twelve are from stock measuring 5/32 inch by 6/32 inch, three from stock 5/32 inch by 5/32 inch, four from stock 4/32 inch by 4/32 inch, one from stock 6/32 inch by 6/32 inch, one from stock 6/32 inch by 7/32 inch, and one from stock 5/32 inch by 7/32 inch.

Type U1: One 3 inch nail with an upset head and a chisel-like point is made of stock measuring 5/32 inch by 6/32 inch (Plate 4a).

Type U2: There are two examples. One, $3\frac{1}{2}$ inches long, has an upset head similar to a flattened out L-head and a sharp point. Vise marks are visible on the shank. A $1\frac{1}{2}$ inch nail has an L-shaped head and a spear point. It is made from stock 4/32 inch by 5/32 inch (Plate 4b).

Brads and Sprigs

These are defined as

... headless, or L-head or T-head nails.
Smaller sizes were usually called 'sprigs',
c. $\frac{1}{2}$ " to 2", usually sold by quantity.
Larger sizes were usually called 'brads'
4d to 24d, usually sold by weight.
(Nelson, 1968)

Brads, Type B1: Two specimens have T-heads formed with a flat or spear point with its broad side parallel to the long axis of the head. One is 3 inches in length and formed of stock $\frac{5}{32}$ inch by $\frac{7}{32}$ inch. One is $2\frac{1}{4}$ inches long and formed on stock $\frac{5}{32}$ inch by $\frac{7}{32}$ inch (Plate 4c).

Brads, Type B2: One clinched specimen $3\frac{1}{2}$ inches long has a T-head and a blunt point. It is made of stock $\frac{5}{32}$ inch by $\frac{6}{32}$ inch (Plate 4d).

"Demonstration" brads with T-heads (Plate 4e, f): Both specimens are made of stock $\frac{5}{32}$ inch by $\frac{6}{32}$ inch. One sharp pointed brad ca. $2\text{-}3\frac{3}{4}$ inches long has been clinched into the shape of a fiddle-head. Another brad of unknown original length and point type was twisted around its axis until the point broke off. It was able to withstand $1\frac{1}{2}$ full twists in a 2 inch length. It is tempting to surmise that the blacksmith was demonstrating both his dexterity and the quality of his products with these specimens.

Brads, Type B3: Two specimens, both made of stock $\frac{6}{32}$ inch by $\frac{6}{32}$ inch, have L-heads with blunt points. One is $2\text{-}3\frac{3}{4}$ inches long, and the other is 3 inches long. The latter specimen was found in wood, and the grain is clearly visible on the shank, indicating that the head was driven in across the grain (Plate 4g).

Brads, Type B4: One 3 inch brad has a T-head with shoulder in line with the long axis of the head. The point is sharp. It is made of stock measuring $6/32$ inch by $7/32$ inch. Immediately below the shoulder the shank measures $5/32$ inch by $5/32$ inch (Plate 4h).

Brads, Type B5: One broken specimen has a T-head with a shoulder in line with the short axis of the head. It is made of stock measuring $6/32$ inch by $9/32$ inch. The shank measures $6/32$ inch by $7/32$ inch immediately below the shoulder (Plate 4i).

Brads, Type B6: One brad of $2\frac{1}{2}$ inches length has an L-head with shoulder in line with the short axis of the head. The point is blunt. It is made of stock $5/32$ inch by $7/32$ inch; the shank measures $5/32$ inch by $6/32$ inch immediately below the shoulder. It is possible that the shoulder is the result of compression of the hot metal at the time of heading and that the nail is actually from $5/32$ inch by $6/32$ inch stock (Plate 4j).

Brads, Type B7: One specimen is a T-headed nail formed by altering a normal rose-head by hammering two sides of the head down against the shank. It is made of stock $5/32$ inch by $6/32$ inch. As there is no taper in the portion of the shank that remains (some $1\frac{1}{2}$ inches in length), it is possible this was meant to be a special kind of rivet (Plate 4k).

Sprigs, Type Sp1: Included in this type are two 2 inch long specimens with T-heads and sharp points. Both are made from stock $5/32$ inch by $5/32$ inch. In addition one broken T-headed sprig formed on $3/32$ inch by $4/32$ inch stock retains an impression of wood fibres across the shank (Plate 4, 1).

Sprigs, Type Sp2: Three specimens have L-shaped heads and

sharp points. Two clinched specimens of 2 inch length are made on 5/32 inch by 5/32 inch stock. One specimen, 1½ inches long, is made of 3/32 inch by 3/32 inch stock (Plate 4m).

Sprigs, Type Sp3: This type has L-shaped heads with flat spear points parallel to the long axis of the head. One 1-3/4 inches long specimen is made of 4/32 inch by 5/32 inch stock. Three broken L-headed specimens are made on different sizes of stock, viz.: 5/32 inch by 5/32 inch; 4/32 inch by 4/32 inch; and 5/32 inch by 6/32 inch (Plate 4n).

Special Purpose Nails

One of the most readily identifiable categories is made up of horseshoe nails. One example was recovered from the site (Plate 4o). Bent, but apparently unused, it is very similar to those still available. The shank immediately below the head measures 3/32 inch by 5/32 inch; the length is 1½ inches from top of head to tip.

Clasp nails form another readily identifiable category. They are distinguished by a gable-like head formed with four carefully directed hammer blows such that the edges of their heads project downward (Plate 4p, q). Like brads and sprigs, they were used in finish work, particularly in soft woods. The special property they could boast was that the heads when driven into the wood would "clasp" a portion of it and resist any tendency ordinary nails might have to "work loose". They were commonly used at least as early as the mid-eighteenth century and are illustrated in Diderot's Dictionnaire Encyclopaedique (1763) as a nail with a "tete rabattue".

Point treatment of the complete specimens is uncertain as most

have been used. They were probably all sharp, although most are now markedly blunted. Numbers of specimens of various lengths and stocks are as follows. Three $2\frac{1}{2}$ inch nails are of $\frac{5}{32}$ inch by $\frac{6}{32}$ inch stock; three 2 inch nails are of $\frac{4}{32}$ inch by $\frac{5}{32}$ inch stock; one $1\frac{3}{4}$ inch nail is of $\frac{4}{32}$ inch by $\frac{4}{32}$ inch stock; one $1\frac{1}{4}$ inch nail is of $\frac{4}{32}$ inch by $\frac{4}{32}$ inch stock. Of three broken specimens one is made of $\frac{4}{32}$ inch by $\frac{6}{32}$ inch stock.

Rivets and Roves

The present sample consists of nine roves (or washers), three of which are still fastened to rivets (or nails) (Plate 2s). The rivets are square and 2+ cm., 2.54+ cm., and 3.25+ cm. in length. All are curved. One lacks a head. Heads resemble the "rose" type but are six rather than four sided. All specimens have four sided shanks. In all three cases the rivets have been fixed over the roves by simply hammering out the blunt end until it overlapped the perforation.

The roves themselves may best be described as diamond-shaped metal plates with single perforations, in this case averaging 2.5 cm. to 3.0 cm. along the longest two sides, and 1.5 to 2.0 cm. along the shortest two sides. Thickness ranges between 0.16 cm. and 0.24 cm. for eight specimens. One specimen is 0.3 cm. thick. On each specimen the two long sides are beveled. There is a close correlation between the width and thickness of the roves and two fragments of iron barrel hoops found at White Earth, suggesting that the roves were almost certainly made by cutting obliquely along a barrel hoop with a cold chisel. One rove has a small perforation beside the central one, possibly indicating previous use of the metal. To judge from the trading post artifacts

available blacksmiths were masters at innovation, and roves from barrel hoops would be par for the course. There is also some historical documentation to lend weight to this argument. The Edmonton House post journal entry for March 29, 1798 states, "The smith making nails for the boats of iron hoops ..." (HBC Record Society, 1967:115).

Rivets and roves are used specifically to secure overlapped planks firmly together as in boat, wagon bed, crate and sometimes plank door construction (Grabert, 1965:22). The blunt pointed rivet is driven through the wood and then through the hole in the rove, over which it is secured by clenching or riveting. An early example of construction with rivets and roves is the Oseberg Ship burial from the ninth century A.D. in Norway. Mercer (1960:250, 252) provides two illustrations, one of the rivet and rove and one of the overlapped planking of the boat with the roves still in place.

The use of these artifacts at White Earth may have been in boat construction, as the traders were using boats at the time and there are many references in the Edmonton House (1795-1800) and Buckingham House (1792-1800) journals to the smith making "boat nails". On the basis of provenience another use may also be hypothesized. At least six of the specimens, including the three with rivets, were found in the plowed field outside, but very near, the north gate of the Hudson's Bay Company compound. These may have been used in the construction of a plank gate.

Miscellaneous Nails

There is one nail shaft with a blunted point which has had its head twisted off. It is 2 inches long and made of 4/32 inch by 5/32

inch stock.

There are thirty-three shaft fragments of nail or brad size. Two good examples of flattened, spear-like points are included.

Whetstone

A portion of a whetstone of grey schist was found in clayey cellar fill in feature 2 (Plate 2q). Maximum measurements of the specimen are 8.7 cm. long by 4.0 cm. wide by 1.8 cm. thick. There are several worn areas on two surfaces and one long edge of the stone as well as a considerable amount of orange-brown stain (iron rust?).

Bone Fleshing Tool

H68.1.785 consists of seven small fragments of a bone fleshing tool (Plate 5t). Four fragments fit together to form part of the working end of the artifact on which four carved teeth are visible. The artifact has been carefully shaped and is highly polished. Some blackening of the bone suggests the specimen has been burned. Provenience for the flesher is feature 2.

Bone Awl

H68.1.883 is a slender bipointed shaft of bone 10.2 cm. long (Plate 1m). Other than a slight amount of polish on one point, there is no evidence for wear either from shaping or use, hence this tantalizing object may be natural and fortuitous and not an awl or pin as the shape suggests. It was found deep in the cellar fill of feature 2.

Native Stone Tools

Three stone artifacts manufactured using aboriginal lithic techniques were found near the fort. H68.1.13, a split brown quartzite

spall unifacially percussion flaked, and H68.1.14, a bifacially percussion flaked sandstone chopping-type tool, were found on the surface south of the North West Company section of the fort. H68.1.260, a golden brown chalcedony side-notched projectile point, came from the plowed field north of the Hudson's Bay Company section (Plate 2f). The latter specimen has an asymmetrical blade and a slightly concave base. It is lensatic in cross section. A heavy white patina, rather chalky in appearance, covers nearly the entire surface of the point and has obliterated nearly all traces of flake removal pattern. Dimensions are as follows:

Total length: 26.5 cm.
Length of blade: 1.9 cm.
Height of notches: 0.35 cm. and 0.4 cm.
Width of blade: 1.1 cm.
Width of base: 1.1 cm.
Maximum thickness: ca. 0.35 cm.

B. HUNTING AND DEFENSE

Ornamented Brass Ramrod Thimble

This specimen, H66.327.67, was both functional and ornamental (Plate 2d). It is a bottom thimble from the underside of a muzzle loading firearm and originally housed the end of the ramrod when the latter was in position. The two prongs attaching it to the stock are now bent in and downwards. At present the specimen is 5.5 cm. long, but when complete was longer. Ornamentation consists of two cast "steps", resulting in variation in thickness of the metal, and incised lines along and across the piece. There are five short cut marks on the back of the piece and one on the front, probably incurred in removing it from the stock. Provenience is recorded as feature 34 within the first 6

inches of the surface.

Hanson (1955:41) indicates that a bottom thimble at the end of the ramrod groove was one of the extra touches the Hudson's Bay Company had added to a regular North-West gun to make it a "Chief's Grade fusil" or "Fine gun". However, the present specimen appears more nearly the size for a pistol.

Gun Barrel (H65.321.39)

One short length (10.5 cm.) of a gun barrel has been altered by flattening and perforating one end (Plate 2b). Diameter of the bore is about 1.5 cm. A worn out flintlock very often would be put to other uses. Hanson (1955:33) states that brass pieces were converted into ornaments, while barrels might become tent stakes, picket pins, pry bars, or hide scrapers (see his plate VIII A,2). No speculations for the revised function of the present specimen are offered. Provenience: the specimen was found on the surface of the site.

Trigger Guard(?)

H68.1.322 is a double curved piece of iron of varying width (2.5 cm. to 1.2 cm.) but uniform thickness (0.265 cm.) (Plate 2c). The narrower portion, also the smaller of the curves, terminates at a break across a perforation for a nail or screw. The wider end terminates in an edge bevelled from one side. This artifact was found in feature 40 and appears nearly complete and unaltered. Its function is uncertain, but it may be a large trigger guard of the type designed for use with mittens (Serven, 1967). A more remote possibility is that it is a knuckle bow from a sword.

Musket Balls

Seven lead musket balls were recovered in excavations. Three, H68.1.55B, .121, .155B, show degrees of flattening from slight asymmetry to a half spherical body. Maximum diameter of the two slightly distorted balls is 1.53 cm. Two were in feature 34, and the latter was uncovered in feature 29. Faulty casting may account for the distortion of these three.

Four unused musket balls (H68.1.155C, .188, .189, .889) have diameters of 1.44 cm., 1.41 cm., 1.44 cm., and 1.18 cm. respectively. H68.1.889 is about 45 caliber and shows a mold seam at its circumference. The specimens were found in features 29, 37 (two) and 2.

Small Lead Shot

Small lead shot was a common artifact found at the fort. Some 135 pieces have been catalogued. Distribution of sizes is between 0.30 cm. and 0.54 cm., with peaks at 0.34 cm., 0.385 cm., 0.43 cm., 0.48 cm., and probably 0.53 cm., although there are very few pieces at the large end of the range. Four main sizes are thus recognized, viz.: size 1: 0.32 to 0.36 cm.; size 2: 0.365 to 0.405 cm.; size 3: 0.41 to 0.45 cm.; and size 4: 0.455 to 0.50 cm. These size ranges approximate caliber ratings of 13, 15, 17 and 19, respectively. Just what relationship there is between these values and Hudson's Bay Company terminology, for example, "Shot Low India" or "Bristol" and "Duck" shot, is unknown at present.

There were three main areas of concentration for the shot. About 40 percent was recovered from feature 34, 23 percent from feature 1, and 20 percent in feature 35. The rest was distributed throughout

features 2, 29, 44 and 45.

Catalogue numbers: H66.327.14, .44, .54, .56, .88, .185, .193, .199, .200, .201; H68.1.19, .30, .35, .55A, .65, .73, .87, .155A, .162, .174, .197, .210, .266, .284, .303, .309, .379, .420, .426, .541, .561, .593, .610, .626, .644, .658, .677, .714, .720, .722, .723, .737, .738, .765, .774, .775, .797, .824, .844, .855, .862, .885, .917, .929, .930.

Gunflints and Gunspalls

Twenty-five specimens were collected from the surface and in excavations.

There is only one gunspall, H68.1.607, which is made of mottled grey opaque flint (Plate 2, 1). It has been used extensively.

Provenience: feature 1.

Nine specimens were made on blades and hence classified as gunflints. Two unused specimens, H66.327.275 and H68.1.172, show little or no retouch on their backs and sides (Plate 2h, i). They are of a matte dark brown (black?) flint which is translucent at the edges. These two at least must be of English origin.

The remaining seven gunflints are too extensively used to determine whether they were made with an English or French technique (Plate 2j, k, m, n, o). The flint varies from dark brown (black?) to grey. On the basis of color (see discussion of Buckingham House specimens, above, page 212) they are probably of English origin. Gunflints were found on the surface of both sites and excavated in features 2, 33, and 35.

Of the remainder of the sample four specimens are pieces of

shattered flints, and eleven are either trimming flakes or flakes detached by the flint striking steel. One small flake, H68.1.2A, was located in situ with a used gun flint, H68.1.2B. The flakes are either dark brown and therefore probably from English flints, or chalky white, grey or slate blue, indicating they were burned. Flakes and/or shattered pieces were found in features 1, 2, 34, 35 and on the surface of the site.

Trap Spring (H65.321.38)

The top half of a steel trap spring with a circular bow was found on the surface of the North West Company post at White Earth (Plate 2a). It is approximately 22 cm. long and 0.35 cm. thick. The specimen tapers slightly from a maximum width of 3.5 cm. It appears similar to the spring on a beaver trap illustrated in Russell (1967:102).

Iron Trade Point

One stemmed projectile point of sheet iron was excavated in feature 32 (Plate 2e). It is 5.7 cm. long, 2 cm. wide at the shoulders, and 0.25 cm. thick.

Copper Trade Point

The base of a stemmed metal projectile point (H66.327.119) was found in feature 34 (Plate 2g). It was cut from sheet copper 0.09 cm. thick. The point itself is 1.72 cm. wide at the shoulder.

C. BUSINESS

Lead Bale Seals

One complete seal (H66.327.120) and three fragments of seals

(H66.327.87; H68.1.258 and .894) were found (Plate 5a, b, c). The former specimen was a surface find in the Hudson's Bay Company area; the others came from feature 34, the plowed area of the North West Company, and the cellar fill of feature 2, respectively.

The complete specimen is closed and stamped on one face with the letters "... N ... ALSA(?) ..." within two concentric circles. A fleece is suspended via a short line from the innermost circle. On the opposite face "14/43" has been deeply incised with a sharp instrument.

H66.327.87 is a disc from a broken seal. It bears part of an inscription which was stamped on when the seal was closed as well as two impressions of the flattened seal. The design seems to be the same as that described above. Part of an inscription still visible reads in clockwise fashion "L SAGE H R" for one half of the circumference and counterclockwise "ONDO.I" for the remaining half of the circumference. A short line similar to that holding the fleece on the above specimen extends inward from the inner circle.

H68.1.258 consists of one unmarked lead disc and a stamped "seal" attached to the center of the disc. The stamped writing reads "& C LONDON" (the last two letters of London are very faint). It was found in the North West Company post.

H68.1.894 appears to be a folded, unmarked disc tentatively identified as being part of a broken bale seal.

Slate Pencils

Two tips of slate pencils (H68.1.52, .888) were associated with building structures (features 2 and 34) in the Hudson's Bay Company area (Plate 5e). The specimens are hexagonal in cross section and 1.35

cm. long, and octahedral in cross section and 1.875 cm. long respectively. The latter is dull and shows evidence of resharpening (by abrasion?), while the former is quite pointed and shows no evidence of being sharpened.

Similar specimens have been found in other fur trade posts, for example, Buckingham House and Fort George. The York Fort indent of Stores sent inland in 1791 lists slate as well as lead pencils among the supplies (HBC Archives, Reel 189 A11/117).

Fragment of Slate Writing Tablet

A small piece of a slate tablet (H65.321.19) was recovered from the plowed surface of the North West Company section. The fragment is roughly rectangular with maximum measurements of 2.06 cm. long, by 2.54 cm. wide by 0.47 cm. thick. One edge has been slightly bevelled or chamfered, probably to fit into a wooden frame. It provides an excellent writing surface for the two slate pencil fragments mentioned above.

Back Plate from a Brass Lock

Artifact H66.327.271 is a cast back plate from a small brass lock suitable for a chest, cupboard, or other small container (Plate 5d). It is rectangular (3.61 cm. long by 2.0 cm. wide by 0.125 cm. thick) and has one narrow side (0.47 cm. wide) along one long edge.

There are two round perforations in the plate for countersunk screws or nails. A third rectangular perforation, 0.7 cm. long by 0.3 cm. wide, situated about 0.75 cm. from one corner and through the side allowed the passage of an iron "catch" to secure the lock. On the inside of the plate there is a broad U-shaped flange with a small,

circular pedestal of equal height at its center. Both are of brass and were cast with the plate. The pedestal would have fitted into a perforated key, and the flange may have served to guide the key as it was turned. The mechanism which controlled the movement of the "catch" and the "catch" itself are of iron and now so corroded that their manner of articulation is no longer discernible.

Red Ocher or Vermilion

Very small pieces of red pigment were found in three locations and catalogued under numbers H68.1.29, .605, and .882. Proveniences were test trench 1, feature 34, and feature 2 respectively. The entry for March 9, 1798, in the Edmonton House post journals mentions that 12 oz. of vermilion, as well as tobacco and powder, was given to Muddy River (Peigan) and Blood Indians who had come for tobacco (HBC Record Society, 1967:113). Many similar instances could be cited. "Vermillion" is listed among the goods in the Edmonton Account Book 1810-1811 (HBC Archives, B/60/d/2^a, Reel IM467).

Beeswax

A small sample of a waxy substance weighing 3.92 gm. was located in silty soil just outside a trench for the northwest corner post in feature 34. In the Edmonton Account Book for 1810-1811 beeswax is listed among the stores supplied to the post, hence the basis for tentative identification of this specimen (HBC Archives, B/60/d/2^a, Reel IM467).

Window or Mirror Glass

A sample of 162 fragments of flat transparent to translucent

(depending on the degree of patination) light green glass was recovered from the surface and in excavations. Eighty-nine of these fragments have part of the original cut edge. The large proportion of edge fragments--over half of the sample--suggests the original objects were small, possibly mirrors. No trace of silver backing remains, but this would likely peel off. A nearly complete rectangular mirror 8.9 cm. x 5.26 cm. x 0.23 cm. has been reconstructed from similar fragments at Fort George (1792-1800).

Some window glass may be present, but in the absence of records of the Hudson's Bay Company's construction work at White Earth there is little evidence to support any identification. At Buckingham House (1792-1800) and Edmonton House (1795-1800) the post journals indicate parchment rather than window glass was employed, at least in initial construction (HBC Archives, Entry for November 12, 1792, B.24/a/1, Reel IM18; HBC Record Society, 1967:17). However, in July of 1794 Joseph Colen, chief factor at York Fort on Hudson's Bay, wrote to Tomison at Buckingham House explaining that the window glass Tomison had requested was expected on the next ship and would be sent inland with the fall canoes. No documentary evidence that this shipment was made has been located, but the statement certainly indicates that window glass was desired inland and presumably could be obtained several years before Fort White Earth was constructed (Correspondence Book for 1793-94. B239/b/55, Reel IM255. Letter of Colen to Tomison dated July 10, 1794). However, window glass was not obtained at Carlton House much further east until 1834, twenty-four years after it had been established --was this the first on the Saskatchewan (Carlton House Journals, HBC Archives, entry for October 23, 1834)?

Thickness of the sherds could be measured in 161 cases. The range is between 0.09 cm. and 0.20 cm., but the main concentration (88 specimens) is between 0.12 cm. and 0.145 cm.

One small edge fragment, H66.327.175, may have been used briefly as a tool. One incurved edge is rounded and smooth but has tiny (use?) flakes removed along a leading edge.

The fragments were distributed as follows:

Surface of the North West Company:	5
Surface of the Hudson's Bay Company:	9
Surface undefined:	11
Feature 1:	4
Feature 2:	3
Feature 32:	1
Feature 34:	103
Feature 35:	26.

D. HOUSEHOLD

Ceramics

Domestic refuse from Fort White Earth includes 118 small sherds of pottery, all imported from beyond North America, in particular China and England. As Fontana (1962:90) has pointed out, lack of chemical, mineralogical, and microscopic studies of non-Indian ceramics forces the archaeologist to rely mainly on historic records and on the whole vessels and hallmarks to identify sherds. The latter are entirely absent in the White Earth sample. As for whole vessels, literature on antique ceramics tends to illustrate spectacular rather than commonplace wares for a period. Archaeological site reports have proved generally unhelpful.

The present analysis rests mainly on the literature dealing with developments in the pottery industry circa the latter eighteenth

century and the early nineteenth century. This approach is definitely limited--wares and probable country of origin can be identified, but seldom specific decorative patterns or specific factories. In part this situation is due to the increasing industrialization the pottery industry was undergoing at this time, especially in England. Copying of materials and designs had become widespread in the latter part of the eighteenth century, and continuing industrialization of the industry after 1800 further facilitated such "shameless borrowing" (The Complete Encyclopedia of Antiques, 1962:903-904; Cotter, 1968:7). No one less than an expert would be required to identify the patterns represented by the very small sherds. It is hoped that the illustrations provided will compensate for the incompleteness of the descriptions. No doubt purchasing records of the Hudson's Bay and North West Companies would have information concerning sources of pottery in 1810-1813, but these records are not readily available for study.

Finally, the sherds are really too small to provide much information concerning the form of vessels from which they come.

Porcelain

Nine fragments of an impermeable white ware were found on the surface of the site. Four are recorded as definitely within the North West Company area, and if memory serves correctly, the other five sherds were found within or most closely associated with the confines of this company's post as well.

The paste is a bright white with only a hint of lustre. A steel file makes no impression on paste or glaze. Cotter (1968:8) indicates porcelain has a hardness of 8-9 on the Moh scale, i.e., it

cannot be scratched by steel. Viewed in cross section, the glaze appears thin and transparent.

Seven of the sherds have a hand painted blue underglaze decoration. Four sherds share elements of the same border pattern on their concave surfaces (Plate 6a, b, c, d). One of these has part of a design on its exterior surface very similar to the design on the exterior of a fragment from the footed base of a small bowl (Plate 6e). The motif is oriental. Elements of the border design are illustrated in photographs of Chinese porcelain with Canton and Nanking borders. Specifically, the outermost border element, blue lattice work on light blue background, is illustrated in Mudge (1962:158 and 159, Figures 75 and 77). The innermost element of the border design (+ 9 +) is illustrated in a photograph of a dish with blue underglaze decoration of a Canton type scene in The Complete Encyclopedia of Antiques (Pl. 334 B.) and in photographs of a blue and white ice pail with Nanking border in Mudge (1962: Figures 76 and 78).

Of the remaining two sherds with blue underglaze decoration, one has only very small traces of pattern; the other (Plate 6f) has five branches reminiscent of a stylized weeping willow tree.

One curved porcelain body sherd (H66.190.52) is undecorated.

The remaining rim sherd (H68.1.942) has a simple black hand painted Greek Key design over the glaze (Plate 6g). A similar, if not identical, border design is illustrated in Mudge (1962:176, Figure 117) on a teapot from a tea service made in China for a U.S. customer circa 1785-1800.

None of the sherds are translucent, a characteristic often reiterated in definitions of porcelain, but this is a factor of the

thickness of the sherds--0.198 cm. at rim to 0.44 cm. at base near foot of vessel. According to Mudge, the very finest Chinese porcelain was not exported.

That the above sherds are indeed true or hard-paste porcelain was confirmed by Mr. J. P. Cloutier of the National Historic Sites Division when they were shown to him by Mr. J. S. Nicks at the Canadian Archaeological Association meetings in Toronto in March of 1969. He further confirmed the identification of the last sherd mentioned (H68.1.942) as Chinese Export Porcelain, i.e., made in China and decorated expressly for a foreign customer, and the rest as porcelain made in China but not specifically decorated for export.

The association of the porcelain with the North West Company area of the post is probably a faithful representation of the area and company in which they were used. At this time the North West Company, through its Montreal agents, did engage in direct trade relationships with China (see Reel 5.M.1. HBC Records, Correspondence of McTavish-Frobisher & Co., letter of December 21, 1792 from Alexander Henry to McTavish, Frazer & Co.; also, Harmon, 1957, entry for October 18, 1814, page 171, and on same page Lamb's footnote).

Thus the ware is certainly not English true porcelain which was being produced by the latter quarter of the eighteenth century (at Staffordshire, for example, by 1782) and which aped oriental designs and underglaze techniques.

Earthenware

"... opaque ware, porous after the first firing and needing to be glazed before being taken into domestic use" (Hughes, 1963:83).

Cream Ware or Pearl Ware with Blue Transfer Underglaze

Decoration: Forty-three sherds of these wares were found on the surface and in excavations at Fort White Earth. Again the identifications were confirmed by Mr. J. P. Cloutier. Examples are illustrated as Plate 6h-v.

Cream-colored earthenware (cream ware) was perfected at Staffordshire, England, in the mid-1770's. During the late eighteenth and early nineteenth centuries, it was made extensively in Staffordshire, Yorkshire and elsewhere, and enjoyed a world market. It was very commonly employed as the base for transfer printed and enamelled designs (The Concise Encyclopedia of Antiques, 1962:903-904, 984).

Pearlware, developed in 1780, is distinguished by a hard white paste containing a greater percentage of flint and white clay than cream-colored earthenware. Like the latter ware it was used mainly for underglaze blue transfer-printing.

Transfer-printing was invented in England and first used at Battersea in 1753. As a method of decoration it was well suited to the increasing industrialization of the pottery industry circa 1800. A decline in the quality of hand painting was concomitant with its rise. The process involves "inking" an engraved metal plate, taking an impression of the design on thin paper, and applying this to the article. At first the transfer was applied to a piece already glazed; with refiring the printing would sink into the glaze, resulting in a smooth surface. Soon after the initial introduction of transfer printing the practice of applying the design before the glaze ("under-glaze") became most popular. With underglaze decoration only one firing is required, but the intensity of heat required to fuse the glaze limited, in the early period of development (pre-1828, according to

Hughes, 1963:107), the variety of pigments which would not be destroyed. Blue, obtained from cobalt oxide, was one of the first pigments known to satisfy the temperature tolerance criterion.

Many of the White Earth sherds exhibit the smudging characteristic of transfer printing until about 1800 (Hughes, 1963:105-106). Probably several different floral, chinoiserie, and diaper designs are represented. The designs on individual sherds are only portions of patterns; therefore it is not deemed possible, without extensive expert study, to suggest a number or description of patterns.

Some speculation concerning the type of vessels represented is possible. Three sherds of the same design, two of which fit together, bear part of a curved foot on the undecorated surface (Plate 6i, j). The opposite decorated surface is flat, suggesting a plate bottom. Another small sherd with darker blue design likewise has a portion of a foot on the undecorated surface, suggesting the bottom of a plate or broad bowl (Plate 6u). In both cases the fragments of designs are reminiscent of the "Blue Willow" pattern which was common on everyday ware of the time and which is often found in historic sites.

Six curved rim or near rim sherds exhibit three different border designs (shared by two sherds in each case). These may be from bowls, plates, saucers, etc., but one pair is almost certainly a cup as there are wide, elaborate border patterns on both surfaces (Plate 6p). In several instances the curved body sherds bear printed designs on both surfaces, an arrangement suggesting steep sided bowls or cups. One such sherd (H68.1.253) has a dull brownish finish directly on the rim, which no doubt was originally gilt (Plate 6o). Even on body sherds with one decorated and one plain "white" glazed surface the decoration is

usually on the convex surface, suggesting bowls or cups or possibly saucers, as extensive decoration would not likely be placed on the underside of a plate where it would seldom be seen.

One sherd is a lug type handle such as is often seen today on sugar bowls (Plate 6h). It bears a portion of a floral pattern.

Cream Ware with Transparent Glaze: Forty-five undecorated sherds fall into this category (examples on Plate 6w). As a result of the combination of paste color and colorless glaze they all exhibit a glassy cream color. Much crazing of the glaze is evident, and on several sherds the glaze has "pot lidded" off due to adverse conditions over the past 159 years of burial.

Thickness of the sherds varies considerably, no doubt because they are from different parts of vessels. The bulk of the sample, thirty-two specimens, are small, curved, body sherds which tell little about the type of vessel from which they originated. Only two fragments fit together. Eight rim sherds are suggestive of plates and bowls or cups, mainly on the basis of variation in thickness.

There are five sherds with an angle, usually broad, which probably occurred at the base of the vessel. One or two thick sherds may be from the base of a plate or bowl.

Earthenware with Polychrome Decoration: Seven sherds are included in this category. Two of these (one apparently lightly burned) have a border pattern consisting of a wide bright yellow band bordered by two thin dark blue smudged lines. A series of evenly spaced hand painted brown dots appears along the center of the yellow band. On the opposite, convex surface of the larger rim sherd there is a simple hand painted (underglaze) blue flower with brown stem and two green leaves on

a plain white background (Plate 6z). This slightly curved sherd may have come from a cup or steep sided bowl. A single small thin rim sherd also has a band of bright yellow on the concave surface just below the rim. In this case the yellow is bordered by a thin brown line and overlaid with a wavy, probably hand painted, brown line (Plate 6x).

A single thick sherd is from the base of a bowl, to judge by the steepness of the angle of the side with the base portion of the sherd. The sherd has been placed in this category on the basis of a portion of a hand painted green pattern (leaf) on an otherwise plain white glazed surface. Whether or not the sherd is truly polychrome cannot be ascertained.

One small split sherd bears a small green hand painted "leaf" with two brown dashes suggestive of veins. Another small split sherd shows two areas of cream and orange colored "glaze" separated by a thick dark brown line.

The remaining sherd, from the rim of a cup to judge by its curvature, is of a mottled brown with a hand painted gilt band on the rim. This sherd was found in the plowed field just outside the north stockade of the North West Company area and may post-date the site.

Earthenware, Surface Finish Destroyed: Four sherds are considered. Two curved sherds (one rim) appear to have been burned, but there are still faint traces of blue border designs on the concave surfaces. Probably these could be classed with the underglaze transfer printed specimens. No evidence of a decorative pattern remains on the other two sherds although they probably were glazed. Both are from the base of vessels with a deep circular foot (Plate 6y). One is probably a jar or mug, as the foot is at the extreme outer edge of the vessel with

the sides rising directly above.

Stoneware with Salt Glaze: The very fine white stonewares resembling porcelain such as made at Staffordshire (1720-1750) had given way to earthenwares for table use by the time White Earth was occupied. However, heavy crocks and jugs of stoneware were common in the nineteenth century (The Complete Encyclopedia of Antiques, 1962:1038; Cotter, 1968: 9). The paste is characteristically opaque, intensely hard (Moh 6-8), and non-porous.

Two categories of stoneware vessels appear to have been used at Fort White Earth.

Five curved sherds varying between 0.2 and 0.29 cm. in thickness appear to be from (a) fairly small vessel(s). From the one rim sherd (H66.190.72) a diameter of 5.08 cm. is projected by fitting the sherd to a series of concentric circles (Plate 7a). The rim has been formed by folding over the upper margin of the vessel before firing. According to Mr. J. P. Cloutier, this procedure was necessary to give strength to the vessel. The sherds have a plain creamy-colored to grey glaze. The latter color may be the result of light burning during use at the post. On all sherds the glaze has a fine granular appearance. Similar fragments have been found at Fort George of the North West Company and Buckingham House of the Hudson's Bay Company, 1792-1800.

Heavy stoneware vessels (thickness ranges from 0.8 cm. to 1.27 cm.) with mottled orange-brown "orange-peel" textured salt glaze exterior surfaces are represented by seven sherds (examples, Plate 7b, c, d). The paste is a light buff color in five sherds and a varying grey in two. In all cases a sharpened steel file fails to scratch the surface.

On the two grey and three of the buff sherds the interior surface of the vessel is intact. As is characteristic of such vessels the interior is unglazed but still impermeable due to the extremely high firing temperature (1200° to 1400° C.) which causes vitrification of the paste.

Two sherds show very definite steeping of the interior surface which results in the progressive thinning of the sherd (1.27 cm. to 1.1 cm. on H68.1.575, and 0.885 to 0.615 on H66.327.247). No doubt such steeping would lighten the weight of a complete vessel. The interior surfaces of the remaining three sherds are slightly undulating but there is little change in thickness. Two sherds lacking an interior surface appear to be from the bases of (a) flat bottomed vessel(s). The "base" is covered with a rough but glassy glaze. Beneath the glaze there are traces of several evenly spaced raised concentric circles, possibly created by some aspect of the manufacturing process.

All sherds are surface finds. Most are from the Hudson's Bay Company area or most closely associated with it. Only one (H68.1.830) is directly associated with a feature, in this case feature 44.

Bottle Glass

142 sherds from a variety of bottles were collected. There is considerable range in size and thickness of the sherds, but many are obvious portions of bottles--bases, necks, corners, sides or body sherds. The possibility that some belong to glasses, tumblers, or goblets cannot be ruled out; however, the considerable thickness of most of them seems unnecessary for drinking utensils. A few sherds have been melted slightly, and a few may well be modern. Three small fragments have portions of raised inscriptions.

Green Bottle Glass: Such glass is used primarily for bottles, flasks and windows. It is made from silica (sand), soda or potash, and lime. The color, which is imparted by various metallic impurities, may range through green to amber (Cotter, 1968:30).

Deep olive green sherds: These are assumed to be from liquor bottles or flasks on the basis of comparative evidence from other sites. The sherds are commonly covered with a heavy, flaky, iridescent patina.

(a) Necks: Four fragments of bottle necks (H66.327.280; H68.1.518, .702, .857) were recovered from the surface of the North West Company area, feature 35, feature 34, and the hearth in feature 35 respectively. The initial two specimens lack rims. They are of rather uniform thickness--0.45 cm. and 0.445 cm. Exterior diameter of the complete neck projected for H68.1.518 is 3.8 cm. The latter two specimens are from rims only. H68.1.702 is incomplete, but a projected diameter for the orifice is about 2.5 cm. (Plate 7e). The last specimen is a complete rim consisting of an irregular wide band level with the orifice and a narrower "string rim" nearly 2 cm. below the orifice (Plate 7g). Inside diameter of the orifice is about 2.3 cm. No doubt this rim was free blown, a fact which would account for the slight asymmetry it exhibits.

(b) Bases: Two forms of bottles are indicated by eight base sherds. A nearly complete "square" base (8.8 cm. by 9.4 cm.) can be reconstructed from sherds H68.1.538A and B (Plate 7h). This base has only a slight kick and no evidence of a pontil mark. Most likely it is a mould blown bottle, as the square shape and lack of pontil mark are uncharacteristic of free blown wares.

The remaining sherds in this category are from a bottle or bottles with round bases and a deep kick. Thickness of the individual sherds ranges from 1.0 cm. to 1.1 cm. No evidence of a pontil mark was found, as the appropriate sherds are not present. However, round bases suggest round bottles, and these certainly could be free blown, in which case a pontil rod would have been employed. Three of these fragments are from feature 35 and probably the same bottle to judge by intensity of color and thickness (Plate 7i). The remaining examples were collected from the surface or excavated in feature 32.

In his final report on Fort Vancouver (1824-1960) Caywood (n.d.: p. 63) indicates that rum came in dark green round bottles, brandy in square bottles, and wine in slightly lighter green bottles.

(c) End and corner fragments: Eighteen sherds, only two of which articulate, are considered. They are characterized by considerable variation in thickness--from 0.72 cm. to 0.18 cm. for the sample, and as much as 0.32 cm. to 0.72 cm. for individual specimens. In individual specimens thinning usually occurs toward the curved edge representing the corner of the bottle. Considerable variation in thickness may occur on a single bottle as evidenced in a nearly complete, although badly fragmented, bottle excavated at Pine Island. Provenience for the specimens is either surface (five fragments) or feature 35 (in which fourteen fragments were found widely scattered).

One sherd, H65.321.26, suggests yet another shape of bottle may have been in use at White Earth. The sherd has two corners, 2 cm. apart, and is similar to a specimen from Pine Island from an octagonal bottle with two sides 5.3 cm. long, two ends 2.3 cm. wide, and four corners 1.5 cm. wide. Thus the present specimen is likely an end. The

sherd is slightly concave exteriorly, suggesting the bottle would have had a slight channel up either end.

Two fragments (H68.1.124A and H68.1.445) have been slightly fused by heat.

(d) Curved shoulder fragments: Twenty-two curved fragments may well be from the shoulder region of bottles. Thickness ranges considerably. Provenience: most sherds were surface finds, nine were from feature 35, one from feature 32, and one from feature 44. Catalogue numbers: H65.321.24; H66.190.74, .207, .212, .223, .269; H68.1.3C, .3D, .96B, .24B, .161, .222B, .327A, .327B, .356A, .356C, .481, .482, .484B, .484D, .513, .594, .802A, .950B.

(e) Miscellaneous sherds: Fifty-two fragments of flat deep olive green glass probably are body sherds from liquor bottles. The sherds vary in thickness from 0.115 cm. to 0.655 cm., and there is variation within individual specimens. Patination varies from slight to an opaque iridescent coating. Provenience: surface (seven specimens), feature 2 (two), feature 34 (five), feature 35 (thirty-three), feature 37 (one), feature 44 (four).

Five sherds (H66.190.56; H66.327.204, .214, .227, .242) have been partly melted and warped. A heavy patina is common, but all proved to be deep olive green. All were surface finds, the first from the North West Company area, the latter four from the Hudson's Bay Company area.

Light Green Glass: (a) Necks: H68.1.178C and E do not articulate but appear to be from the same bottle on the basis of color and lack of surface patination. They look suspiciously recent. Projected diameter for the orifice is 2.54 cm. Provenience of the

specimens is feature 37.

(b) End: H66.190.57 is from the end of a light green bottle. It is uniformly 0.21 cm. thick. The sherd was a surface find in the North West Company post.

(c) Curved body sherd: One light green sherd (H66.190.206) was found in feature 35. It varies from 0.22 to 0.49 cm. in thickness. The surface is lightly patinated.

Clear Glass: (a) Bases: H66.327.281, a round base and short portion of the body, came from the surface of the North West Company post. Thickness of glass varies from 0.65 cm. to 0.84 cm. The present light purple tint likely results from a chemical alteration of clear glass due to exposure. Only a slight surface patination is observable and the broken edges have a distinctly recent appearance.

Five complete or nearly complete bottle bases of clear glass were recovered. Four, H68.1.3A, .406B, .477, .479, were surface finds. H68.1.266 was excavated in feature 35. Possible pontil marks are present on the exterior surfaces of two specimens, a fact which indicates a free blown technique of manufacture. All except H68.1.479 have a light surface patina. The specimen indicated is 6.6 cm. in diameter. It was obviously mould-made, as there are two seams along the side and at the base. In addition a raised "1" occupies the base in place of a pontil mark. Finally, it was found in a plowed field just north of the site and may post-date the fort.

(b) Ends: H68.1.487 and H68.1.935 are from ends of bottles. In the latter case the bottle was probably rectangular with a slight channel running up each end. Thickness of glass for the present specimen is 0.235 cm., but there could have been considerable variation

in the complete bottle. The latter specimen is a surface find from the Hudson's Bay Company area. The former was found on the surface but its specific location was not recorded.

(c) Curved body sherds: H66.190.76 is a curved sherd 0.125 cm. thick which was found on the surface of the Hudson's Bay Company post. The surface is covered with a light iridescent patina.

(d) Flat body sherds: Two sherds, H68.1.396A and B, were located in feature 35. Both specimens are of varying thickness--0.185 cm. to 0.345 cm., and 0.205 to 0.330 cm., respectively. Each has slight surface patina.

(e) Monogrammed sherds of clear glass: H68.1.259 bears part of the inscription from a bottle of "Turlington's Balsam of Life", viz.

"AL
01
LIF.." The full inscription is recorded below (page 218). It was

found on the surface near the easternmost cellars visible in the North West Company post.

The monograms on the remaining two fragments, both surface finds, have not been identified. Only small portions of letters are present, so that it is not even possible to orient the fragments on this basis with any certainty. H68.1.480B presently has a purple tint. This sherd also has a mould seam and a short portion of a rim.

Silver Spoon

The prize specimen of silver is a complete teaspoon in excellent condition except for a slight bending forward of the handle (Plate 7j). The initials "JB" are carved in ornate script at the upper end of the handle; otherwise there is no decoration. It is probably more than a coincidence that the name of the Hudson's Bay Company factor

at Edmonton House III was James Bird.

The spoon was located in situ in silt, bone, charcoal and plaster fill beneath the charred planking of feature 34. The hallmark on the back of the handle should be closely datable. As yet the exact references of the individual motifs have not been traced, but a general date of 1784-1820 has been established. The earlier date is indicated by the final motif, a monarch's head, which indicates payment of excise duties required between 1784-1890. The terminal date is indicated by the head turned full face (passant gardant) on the second motif, an heraldic lion, the mark of sterling silver. Since 1821 the lion has looked straight ahead. The date letter, including the shape of the punch mark surrounding it, most closely but not exactly resembles that used in London in the year 1795. There is also a possibility that the spoon is of Canadian manufacture. The maker's initials, "RC", appear to have been restruck over a previous motif, probably that indicating the assay office.

Bone Handle

H66.327.272 is a portion of a bone handle from a piece of cutlery (Plate 7f). It is now 5 cm. long and tapers from 1.6 cm. to 1.86 cm. in width. Maximum thickness is 0.83 cm. and is made up entirely of compact tissue. An iron nail or rivet projects from the flat interior surface near the end of the handle. The opposite end has broken at the level of weakness caused by a hole drilled for a rivet. Decoration on the convex outer surface consists of shallowly carved wide diagonal lines. A surface find, the specimen came from near the easternmost cellars in the North West Company post.

Copper Pull Ring

H66.327.284 is a ring of thick copper very like those attached to the lids of copper trade kettles (Plate 1g). A similar one was found at Pine Island still attached to a kettle lid. The ring is circular with an outside diameter of 4 cm. and an inside one of 3 cm. The wire from which it was made is ovoid in cross section. This specimen was found in the North West Company section of the site.

E. CLOTHING AND ORNAMENT

Buttons

Iron: One badly corroded iron disc (H68.1.638), ca. 1.15 cm. in diameter, is tentatively identified as a button. There is no evidence for an eye or perforation. The specimen came from a trash pit (feature 26).

Brass: Eight buttons of plain brass were recovered. All have undecorated flat faces. Four are large with diameters from 2.2 cm. to 2.535 cm. and thicknesses from 0.09 cm. to 0.16 cm. The smallest specimen in this group has the word "PLATED" and a laurel wreath design stamped in circular fashion on its back (Plate 5r). This button and another of similar size (2.29 cm. in diameter) have eyes soldered directly to their backs--a form dated 1785-1800 by Olsen (1963). The remaining two are cast but show no mold marks and have eyes set into bosses, a form Olsen dated 1760-1785. H68.1.319 is illustrated as v, Plate 5.

Four small specimens range from 1.53 cm. to 1.94 cm. in diameter and in thickness from 0.75 cm. to 1.15 cm. Like the latter two

buttons above, they are cast and have eyes set into bosses. Three of the buttons manufactured in this manner have been spun to reduce the button back to the required thickness.

Catalogue numbers: H68.1.319, .410, .424, .551, .591, .598, .890, .902. Provenience for the specimens is feature 40, surface of North West Company, feature 2, feature 1, feature 44, feature 44, feature 2, and surface of Hudson's Bay Company, respectively.

Pewter(?): Six specimens of a pewter-like metal bear the Hudson's Bay Company motto, "Pro Pelle Cutem", encircling entwined initials "HBC", all surmounted by a fox, stamped on their faces, in some cases slightly off center. Two of these (H68.1.159 and .170) are large coat sized buttons--2.20 cm. in diameter by 0.095 cm. thick, and 2.05 by 2.14 cm. by 0.090 cm. thick (Plate 5j). Both bear inscriptions stamped in circular fashion on the back, viz.: "WE //// ALL , , , , FI~MIN : : : ", and "I , , , , FIRMIN , , , , WE TALL |", respectively.

Four HBC buttons (H68.1.33, .99, .417, .881) are of smaller, waistcoat size, ca. 1.5 cm. in diameter and 0.085 or 0.1 cm. thick (Plate 7k). In all six specimens the eyes are missing, but it appears that they were cast with the button and surmounted hemispherical feet.

At least one Hudson's Bay Company journal indicates that company (Pro Pelle Cutem) buttons were common items at inland posts. Wm. Tomison, in a letter of December 20th, 1795, complains of the shortage of "Shot Low India" at Edmonton House and continues, "I have already made an exchange of 12 dozen of the company's buttons for ball, and as soon as I can get a ladle made I intend to convert the remainder, into that article ..." (HBC Record Society, 1967:51).

H68.1.34 is of a pewter-like metal but had an iron eye, now

rusted away, which was set into a boss. A mold seam is visible across the back of the button. This specimen is similar to the type Olsen (1963) places in the period 1760-1790. Provenience: feature 34.

H68.1.160 is made of a white metal alloyed with some copper. The button is 1.935 cm. in diameter and 0.095 cm. thick. It has a flat, undecorated face. On the back an eye, now missing, was set into a burr edged foot and then the button was spun to reduce its total thickness. Olsen (1963) places buttons of this type in the period 1760-1785. Provenience: feature 35.

One white metal button (H68.1.310) has a strongly convex undecorated face (Plate 5n). An eye is set into a burr edged foot and the back shows spin marks. Diameter is 1.215 cm. The button is in excellent condition, a fact indicating the metal is quite corrosion resistant. It was found in the cellar fill of feature 2.

H66.327.21 is of cast white metal and has an eye of the same metal (Plate 5m). The face is flat and undecorated. There is bevelling around the circumference on the back side, leaving a slightly smaller back area. Diameter of the face is 1.42 cm., thickness is 0.115 cm. The wire eye is set into a boss and has two ornamental incised parallel lines along its length. One thin concentric circle is incised ca. 1 mm. out from the foot. This button was found in feature 34.

Shell (Mother-of-Pearl): One small button of shell (H66.327.85) was excavated in feature 34 (Plate 5p). The body of the button is a flat disc of shell ca. 1.1 cm. in diameter and 0.2 cm. thick. Some erosion has taken place around the circumference. The shell is backed by a brass plate bearing a brass eye set into a foot.

Gilded Brass Button: One brass specimen (H66.327.7) still

bears traces of gilt on its otherwise undecorated, slightly convex, face (Plate 5o). It is 1.5 cm. in diameter and 0.12 cm. in thickness. The back is slightly concave and bears a brass eye set into a boss. There are two ornamental parallel incised lines extending along the length of the wire eye. Provenience: feature 34.

Bone Button Blank: Specimen H68.1.416 is a flat bone disc 1.4 cm. in diameter by 0.16 cm. thick with a single central perforation (Plate 5q). One surface is covered with concentric spin marks, while the opposite surface shows straight striations across the face and only a few concentric cuts around the outer edge. This object is similar to a bone button blank as described by Barka (n.d.) and Olsen (1963), and known in collections from Pine Island and Fort George. The single hole in this case would be to index the turning tool used to cut out the blank. The four additional holes to attach the button to the garment have not yet been drilled. In Olsen's chronology buttons with bone backs enjoyed a long period of manufacture from 1750-1830, a period encompassing Fort White Earth's occupation. The blank was found well down in the cellar fill of feature 2.

Brass Cufflinks

A pair(?) of brass cufflinks was found in feature 45, an ash pit along the south stockade (Plate 5i). Each half is oval in outline, 1.6 cm. long by 1.3 cm. wide by about 0.075 cm. thick, and has the impression of an anchor entwined by a piece of rope stamped on the face. There is an eye on the back of one half which was probably cast with the face. Two bases of posts, probably at one time extended and joined to form an eye, are present on the opposite link.

Associated with the two oval pieces was a short length of brass wire 0.15 cm. in diameter and 1.4 cm. long, not including a short hook at one end. No doubt this piece was used to join the two ornamental halves, but it is not certain if it was ever permanently attached to one of them.

Brass Chain

Two joined links of a brass chain (H68.1.863) came from the cellar fill in feature 2 (Plate 5g). The wire is 0.15 cm. thick, and each link 1.1 cm. long. The links are simple open "3" shapes but with the upper and lower halves at a 90° angle to each other. Such a simple design could have been executed locally. Wire of nearly the same diameter was excavated at White Earth.

Brass Eye

One artifact, H68.1.659, is an eye from a "hook-and-eye" type of fastener (Plate 5f). It is fashioned simply by bending double wire 0.16 cm. thick to create a loop at one end; then a shaft; then two curved, sharply pointed, prongs at the opposite end. The sharp prongs would hold the cloth, etc., and additional stitching along the shaft would secure the eye to the garment. The specimen is 1.35 cm. in length. It was found in feature 34. Like the brass straight pins this artifact suggests the presence of tailors at the fort although the possibility of its coming from someone's imported garments cannot be ruled out.

Brass Straight Pins

Four brass straight pins with round heads were excavated

(Plate 5s). In each specimen the head has been formed by wrapping a piece of brass wire in spiral fashion twice around the shank. Further treatment, probably soldering, secured the coils to the shank and together, sometimes to the extent that the line of juncture is nearly obliterated. Lengths of the specimens are 3.33 cm., 3.875 cm., 2.4+ cm. (slightly curved), and 2.915 cm. The thicknesses of the wire forming the shanks are 0.095 cm., 0.110 cm., 0.18 cm. and 0.19 cm., respectively. Provenience for H68.1.421 is feature 2, for H68.1.674 feature 34, and for H68.1.358 and .560 feature 35.

Whether these pins were imported to the fort or made at the fort is not known although there is no reference in the post journals consulted to manufacture of such artifacts. Straight pins may well have been used by the ubiquitous post tailor or tailors responsible for making clothing for both trade and traders.

Grabert (1965:42) found eleven brass straight pins varying from 2.7 to 3.3 cm. long at Fort Okanogan. They were manufactured in the same manner as the above specimens.

Silver

Seven artifacts of silver were recovered. Three of these, H68.1.6, .7, and .264, were found in the plowed field north of the north palisade of the Hudson's Bay Company. The first two specimens are broken and bent parts of circular brooches or pendants. H68.1.6 is of circular shape with an outside diameter of ca. 6.1 cm. and inner diameter of ca. 2.9 cm. (Plate 8a). Width of the band is 1.0 cm. Thickness of the metal is 0.45 cm. A simple design is lightly incised into the silver. It consists of two concentric rows of rocker stamping

surmounted by irregularly spaced isosceles triangles of which one equals arm is formed of a double row of rocker marks and the other by a single row. Between triangles a sharp instrument has been used to incise (stamp?) a series of three short lines. The only marking on the opposite surface is a lightly incised initial M with a line through it. Two small round holes in the metal just at the inner edge probably held the clasp.

H68.1.7 is a somewhat more elaborate specimen although it is more difficult to determine the original use and shape (Plate 8b). At present it consists of a band of silver ca. 1.2 cm. wide in the form of an arc. It is broken at both ends, and therefore may have formed a complete circle at one time. If so, the circle would have had a diameter of ca. 11.5 cm. Ornamentation consists of alternating circular and rectangular cut-outs and well executed incised lines. Adjacent to the cut out circles on the inner circumference a projection of the metal has been truncated. There is no maker's mark. A shorter fragment of similar ornamentation was excavated at Fort George.

H68.1.264 is a portion of a silver earring (Plate 8e). The fine wire which would have passed through the ear lobe is missing. The face of the earring is circular (diameter of 1.6 cm.) and raised in a sunburst design. The design appears to be the result of a casting process and not later incising. A plain flat back of silver has been soldered to the convex face, giving a light, hollow structure. A heavy loop of wire is soldered near the edge of the back opposite a small hole. The opposite end of the wire is split slightly and retains a small screw--a finer wire likely attached here and hooked into the small hole to secure the ornament to the ear. There is no maker's mark on the

specimen.

Like many other trade silver designs this pattern was adopted by Indian silversmiths who probably began their work about the time of decline of the fur trade. It is illustrated with Oneida brooch and ear ornaments collected by Charles E. Kelsey between 1887 and 1895 (Baerreis, 1950:81, Fig. 10).

An undecorated narrow ring of silver, H68.1.158, came from feature 35 (Plate 8c). Inside diameter is 1.715 cm., width is 0.145 cm., and thickness is 0.070 cm. There is no maker's mark.

H68.1.614 consists of a long silver rod to one end of which is attached two shorter lengths of wire, each threaded through a spherical metal bead (Plate 8d). Possibly this specimen is part of a necklace.

H68.1.719 is a small fragment of sheet silver of the following dimensions: 1.38 cm. long x 0.385 cm. wide x 0.025 cm. thick (Plate 8y). It was found in feature 1.

Discussion: If indeed all silver recovered was originally associated with the Hudson's Bay Company and not the North West Company, it would have been brought in from England and not Montreal (HBC Record Society, A67:114; Webster, 1967). In 1798 the price set for silver by the Governor and Committee varied between one-half and three made beaver, but they also indicated it could be given "... as a present of small value ... sometimes necessary to be made to the Chief Indians". At this time the silver articles were supplied to the Hudson's Bay Company by William and George Russell of Birmingham (HBC Record Society, 1967: footnote page 114).

Tinkling Cones

Seven tinkling cones were found together in feature 34. They are all made of thin sheet copper ca. 0.07 cm. thick, which was cut into small trapezium-shaped blanks then rolled until the two long sides met. The specimens range in length between 2.36 cm. and 2.7 cm., with 2.5 cm. the mode. One specimen (H66.327.137) retains several strands of what appears to be a coarse brown thread in its interior (Plate 5h). The close association of the specimens and the presence of thread in one suggests they may originally have been sewn to the same garment which has long since deteriorated.

Catalogue numbers: H66.327.133, .134, .135, .136, .137, .138, .139. Provenience for all is feature 34.

Trade Beads

Glass trade beads are the most common artifacts at both Buckingham House and Fort White Earth. They have been analyzed on the basis of three more-or-less obvious criteria; viz., method of manufacture, color, and size.

In the description the expression "more-or-less" is to be understood in several ways. In terms of methods of manufacture it means that archaeologists do not yet know all of the techniques used to make beads found in historic sites. The basic categories used here are those described by Murray (1964), i.e., tubular beads (made from drawn tubing, often with subsequent treatment which rounded broken edges), and mandrel wound beads (made by wrapping glass at melting point around a rotating, tapered iron mandrel). See also Woodward (1967:4-14) for methods of manufacturing glass beads. Pressed glass beads and blown glass beads as

described by Murray and perhaps other techniques have not been recognized in the present samples. Variations in the method of making tubular beads--e.g., two layered or one layered, addition of colored stripes, and possibly painting and faceting--are indicated in the descriptions below. It is possible that extensive use of a microscope would indicate further divisions be made, especially among the white beads. Added decoration on mandrel-wound beads is taken into account.

As far as color is concerned, "more-or-less" is rather significant. Ideally, according to present consensus among historic archaeologists as expressed at the January, 1969, meetings of the Society for Historical Archaeology, one should use standard lighting and a Munsell color chart. And, of course, one should not be color blind in any degree. Standard lighting was used and consisted of a two battery penlight with a deep collar around the bulb which channelled the light into a narrow bright beam. Beads held in this stream of light usually revealed color and amount of translucency in spite of heavy patination. Reasons given for preferability of the Munsell chart include its wide availability, precision, and adaptability of its designations to computer coding (Sprague, 1969:18). Unfortunately a complete Munsell chart was not available for the analysis of the present samples. The color assigned a bead is a subjective one--standard only in that every specimen was examined by the author. The categories as given group differing intensities of color, but so far as can be observed these relate only to the size of the bead.

Sizing of beads was accomplished using a knitting needle gauge, as suggested by R. Sprague (1969:18). The values reported are those used in the U.S.A. and were chosen in the interest of comparability

of data since the method was initiated in that country. Canadian designations are simply in reverse order of the American, while the French designate the same gradations by figures which approximate the metric size of each hole. The system is of the "go no-go" type in which the object being measured is given the value of the smallest hole it will pass through. Murray (1964), Sprague (1969), and Woodward (1967:7) have suggested that sizing of beads originally was accomplished by screening or sifting which in essence is a "go no-go" system. Sprague further indicates that the numbers used to designate size gradations of the gauge correspond to those generally utilized by the bead industry.

Due to pressures of time only the exterior diameter of each bead has been measured, but considering the method of manufacture, for tubular beads at least, it is probably as significant as any other dimension. Also it is the single parameter most often discussed in literature on trade beads (Murray, 1964; Sprague, 1969; Conn, n.d.). Length and bore diameter might also be of interest. Kidd has indicated that it is desirable, if tedious and time consuming, to find mean lengths for samples of beads. Lengths have been indicated only for beads that are particularly greater in length than in diameter, mainly for the mandrel wound beads, but also for a few tubular types, sometimes referred to as "bugle" beads, which occurred mainly among the blue beads and beads with opaque white cores and translucent or transparent outer coats. No bore measurements were made.

Provenience: all beads collected at Fort White Earth came from the Hudson's Bay Company post. Distribution by feature is as follows:

Feature 1: 10%

Feature 2:	2%
Feature 34:	65%
Feature 35:	20%
Feature 38	} 1%
Feature 42	
Surface (HBC)	

The remaining 2% were found subsequently in the level bags from the Hudson's Bay area; hence, although exact provenience is unknown, they are assumed to be from that area.

Key to Bead Types

Beads Made from Drawn Tubing (Plates 8s, 14b):

- Type 1: These show medium blue color in direct light, but are aqua and translucent with back light. On a small percentage of the sample the surface is lustrous. Most have rounded edges indicating secondary heating. Intensity of the color and amount of translucency varies with the length and thickness of a particular specimen.
- Type 2: Basically Type 1 except that the beads retain a varying amount of a lustrous brick red enamel or patina on their outer surfaces.
- Type 3: Opaque light blue-grey beads. All have rounded ends.
- Type 4: Translucent deep sky-blue beads.
- Type 5: All have an opaque white core. The outer coating varies in thickness and appears to be opaque or slightly translucent.
- Type 6: As Type 5 except that the outer coat is translucent and in some cases possibly transparent. One Buckingham House size 4 specimen is 0.5 cm. long.
- Type 7: Opaque white beads lacking cores. The surfaces of these beads are lustrous.
- Type 8: As Type 7 but with flat rather than lustrous surfaces.
- Type 9: An uncertain category. Beads are white and coreless and appear semi-translucent.
- Type 10: Opaque chalky white beads with added longitudinal stripes alternating from green to yellow.
- Type 11: Translucent beads of rich wine red color. Without back light, these beads appear black. One Buckingham House size 3 bead

has two small facets.

- Type 12: Translucent beads of a clear cherry red color. These beads seem particularly subject to destruction. Often they have a purple appearance due to patination.
- Type 13: Opaque grass green beads.
- Type 14: Probably the same as Type 13. They have an iridescent surface which is probably the result of weathering.
- Type 15: Translucent emerald green beads.
- Type 16: Transparent bead with a core. The surface is covered with an iridescent patina.
- Type 17: Transparent, coreless bead.
- Type 18: Opaque yellow beads.
- Type 19: Translucent yellow beads.
- Type 20: Opaque black(?) beads. Patination may be responsible for the apparent color.
- Type 21: Cornaline d'Allepo beads. These have opaque brick red exterior coats and thick cores of clear glass. If no back light is used, the core appears greenish.
- Type 22: Also a Cornaline d'Allepo bead, but the core appears to be very dark red or black.

Large Beads of Drawn Tubing (Tubular or Bugle Beads):

- Type 23: Resemble Type 1 in color and translucency but are much longer. The White Earth specimen is 1.2 cm. long and has an iridescent patina (Plate 8v). The Buckingham House specimen is 1.35 cm. long (Plate 15q).
- Type 24: Deep sky blue bead with longitudinal white pin stripes. The specimen is translucent and 1.7 cm. in length (Plate 8w).
- Type 25: A transparent bead with broken ends. Present length is 0.8 cm. (Plate 8u).

Mandrel Wound Beads (Plates 8t; 15s, t, u):

- Type 26: Opaque white beads ranging from 0.5 cm. to 1.05 cm. in length. Generally as length increases so does the diameter.
- Type 27: An opaque white bead with an inlaid vine or floral pattern in red and green. The bead is 1.13 cm. long and 0.84 cm. in diameter (Plate 15u).

Type 28: One translucent clear cherry-red bead, now considerably weathered. It is 0.74 cm. long and consists of at least six coils (Plate 15s).

Type 29: Medium blue translucent barrel shaped beads. One is 0.6 cm. long.

Type 30: An opaque black bead. The color may be due to patination (Plate 8t).

Fancy Beads:

Type 31: Star or Chevron bead (see Woodward, 1967:9-10). One specimen only split in half lengthwise. Projected diameter is about 1.0 cm. It is 2.08 cm. long. This specimen has a white opaque core and a dark outer layer with red trim (Plate 15r).

Spherical Beads, Technique of Manufacture not Recognized (Plate 8x):

Type 32: A translucent (slightly) aqua bead. Lighter in color than Type 1. The specimen is 0.5 cm. long.

Type 33: There are two slightly translucent white specimens. Both are 0.5 cm. long.

F. RECREATION

Kaolin Pipes

A total of 252 fragments of kaolin pipes were recovered in excavations in 1966 and 1968, and by surface collecting in 1965, 1966 and 1968. Included are fragments of pipestems, pipe bowls, and combinations of these. Discussions concerning the manufacture of clay pipes are found in Oswald (1960), Walker (1967), the Encyclopedia Britannica (1911, Vol. XXI, pp. 633-634), as well as other sources.

The largest category contains 156 fragments of pipestems showing breaks at both ends. Most often the breaks leave an irregular surface, but some specimens have one very smoothly broken end. In the latter case careful examination reveals no deliberate attempt to produce

Exterior Diameter		Method of Manufacture																												Fancy	Spheri- cal					
		Drawn Tubing																																		
		Blue						White						Red		Green			Clr.		Yel.		Bk. Corn		Tubular (Bugle)							Mandrel Wound				
Cm.	Gauge Value	T. 1	T. 2	T. 3	T. 4	T. 5	T. 6	T. 7	T. 8	T. 9	T. 10	T. 11	T. 12	T. 13	T. 14	T. 15	T. 16	T. 17	T. 18	T. 19	T. 20	T. 21	T. 22	T. 23	T. 24	T. 25	T. 26	T. 27	T. 28	T. 29	T. 30	T. 31	T. 32	T. 33		
	< 00	1																					1													
0.2	00															2																				
0.23	0							2	3		1	1	1		1							1														
0.27	1	22	1	6	1	3	3	7	13			4	2	2	2		2			1		2														
0.3	2	57		5	2	18	7	23	16	2	1	2	2		2			1	2	3	1															
0.344	3	99	3	15	1	57	15	19	10	4		10	2			7	1	1	1		2	7						2								
0.37	4	22		5	2	22	4	2	2			1			2	1			1			4						1								
0.416	5	8		3		15	1					2				2					1															
0.45	6	3		1		7																							1							
0.5	7					1																														
0.555	8																																			
0.59	9																																			
0.65	10																																			
0.71	11																								1											
0.756	12																																			
	> 12																																			
TOTALS		212	4	35	6	123	30	53	44	6	2	20	7	2	5	15	1	2	4	4	3	16		1					4	1	1				1	

(See pp. 182-184 for key to types.)

Total = 602

FIGURE 18: BEADS FROM BUCKINGHAM HOUSE (1792-1800)

Exterior Diameter		Method of Manufacture																												Fancy	Spheri- cal								
		Drawn Tubing																																					
		Blue								White								Red		Green				Clr.		Yel.		Bk.				Corn		Tubular (Bugle)					
Cm.	Gauge Value	T. 1	T. 2	T. 3	T. 4	T. 5	T. 6	T. 7	T. 8	T. 9	T. 10	T. 11	T. 12	T. 13	T. 14	T. 15	T. 16	T. 17	T. 18	T. 19	T. 20	T. 21	T. 22	T. 23	T. 24	T. 25	T. 26	T. 27	T. 28	T. 29	T. 30	T. 31	T. 32	T. 33					
	< 00	1						1																															
0.2	00																																						
0.23	0 6							3																															
0.27	1 6	1	1			3	1	32					8			2			1																				
0.3	2 147	2	2			12	4	58					19		3				1	1	1																		
0.344	3 136	1	1		1	31	12	12				1	20		1				1	4	3																		
0.37	4 15	1	1			16		2				2	4				1			1																			
0.416	5 11					10		1				2	3							1		2									1								
0.45	6 1	1				2						1	9											1															
0.5	7												4																										
0.555	8																									1	1												
0.59	9																																						
0.65	10																								1								1	2					
0.71	11																																						
0.756	12																																						
> 12																																							
TOTALS		386	5		1	74	17	109				6	67			6		1		3	7	3	2	1	1	1	1	1	1	1	1	1	1	2					

(See pp. 182-184 for key to types.)

Total = 706

FIGURE 19: BEADS FROM FORT WHITE EARTH (1810-1813)

such a break, as, for example, cutting off or incising a line around the circumference of the stem to guide the break--a method suggested by the archaeological evidence at Fort George and Pine Island. Some fifty specimens in this category are quite white throughout, suggesting that they were never or seldom smoked. The rest of the specimens show various degrees of discoloration suggesting varying amounts of use. It is also possible that some of these specimens were burned subsequent to breaking (thrown into a hearth, for example).

The sample recovered includes thirty-two stem fragments with tapering bits and the original mouthpiece. In twenty-nine cases there is a slight lip built up around the bore on the mouthpiece--perhaps raised as the metal piercer used to form the bore was withdrawn before the clay was quite dry. Two specimens have no lip at the mouthpiece, but appear to have been cut off while the clay was still slightly plastic, thus leaving a straight, smooth surface. H68.1.1B retains only a small portion of the bit end. Five of the bit ends show no discoloration, a fact which suggests the pipe was broken before being long used (H66.327.183; H68.1.1B, .27E, .27G, .949A).

Specimens H68.1.1A, .142 and .826C appear to be broken stem fragments of which one end has been reused as a mouthpiece. They do not show the tapering characteristic of the thirty-one examples above. H68.1.826C has slight indentations, as if from being tightly clenched between teeth, about a quarter inch from the end.

Fifteen examples are stem fragments which have broken just at the junction with the bowl. These characteristically expand at the bowl end. Three of these, H65.321.4, H68.1.370, and H68.1.515, are quite white throughout and may have been used little if at all. Catalogue


numbers: H65.321.4; H66.327.23, .83, .190; H68.1.468 and .314 (glued together), .357, .370, .437A, .437B, .461A, .461B, .473B, .515, .751A, .473S.


Mould markings are visible along the stems of at least three specimens (H66.327.24, .123, H68.1.37B).

Four short stem fragments (H65.321.3; H66.327.231; H68.1.1G, .108B) show one or more random gouges. H66.327.231 also shows one whittle(?) mark. These marks could have been incurred at any time during or after manufacture of the stem.

Only two stem fragments (H68.1.532A and .532B) were found to fit together. A puncture is evident at the point of impact which caused the break. The stem is heavily discolored and therefore assumed to have come from a heavily smoked pipe.

Specimen H68.1.51F is broken and retains a metal rod in its bore. The pipe stem is discolored from use. Perhaps the wire became stuck while attempting to clean the bore.

The remaining specimens are either fragments of pipe bowls or a combination of bowl and stem fragments. The latter category contains thirteen specimens. Nine consist of short sections of stem, some portion of the bowl (usually very small), and a spur or heel. Eight of these clearly have the initials "T" and "D" in raised letters on opposite sides of the spur or heel (see example, Plate 8p). Inspection revealed that two sizes of letters were present, here called simply "small" and "large". In the small category the "D" is lying on its back (")" when the pipe is held in position for smoking (see examples H68.1.233, .606, .760. H68.1.606 is illustrated in Plate 8r. The same situation prevails with the single complete pipe bowl from Buckingham House, but

the monogram on the bowl differs from those in the White Earth sample.) With the large letters the D is found to lie on its front (") when the pipe is in position for smoking (see specimens H66.327.34, .239; H68.1.297, .440, .741, .753. Specimen H66.327.34 is illustrated on Plate 8q). Specimen H65.321.1 appears to have had some marking on the spur, but it is indistinct. One specimen, H68.1.606, retains nearly all the lower half of the bowl and has a portion of a monogram on the posterior surface of the bowl. It appears to be part of the incised circle design surrounding the initials of a "TD" monogram.

Specimen H68.1.475C consists of a small portion of the lower and posterior part of the bowl and that portion of the stem immediately at the juncture of stem and bowl.

There are three examples showing modification of the short stem attached to the bowl. H66.327.34 (plus complementary bowl fragment H66.327.146) retains ca. 4 cm. of stem of which two-thirds shows evidence of filing, probably to decrease the diameter of the stem so that a new wooden stem could be fitted to the pipe. The entire specimen is nearly black throughout, suggesting heavy use. There is a spur marked "T" "D" (see above discussion) and a small incised line on the posterior portion of the bowl--possibly part of a monogram.

Specimens H68.1.359 and .690 consist of sizeable fragments of the lower posterior parts of the bowl and stems, ca. 2 cm. and 1.5 cm. in length, respectively (Plate 8n, o). Neither have spurs. Both stems have been carved so that they taper toward the broken end as if to facilitate the addition of a supplementary mouthpiece. Both are extensively discolored.

Twenty-one bowl fragments were recovered. Five of these fit

together to form a nearly complete bowl lacking the posterior surface. Height of the reconstructed bowl is 3.2 cm.

Six fragments include part of the rim of the pipe bowl. Two heavily smoked specimens (H66.327.73, .107) are very nearly the full height of the original bowls--they now measure 2.2 cm. and 3.7 cm. respectively (Plate 8g, h).

Five small fragments are body sherds and show no markings.

Parts of monograms are present on three rim sherds and two body sherds. All or part of the initials "TD" show on four specimens, while the fifth shows only the lower ornamentation of a "TD" monogram (Plate 8i, j, k, l, m). On H68.1.44 the monogram has been restruck so that two "T's" are superimposed.

The general contours of the bowls indicate the pipes are of English manufacture (Atkinson, 1958; Walker, 1967; Oswald, 1955 and 1960). The "TD" initials may refer to a number of makers: several makers who employed TD marks on their pipes are listed by Adrian Oswald in his 1960 article. None of these are very closely associated in time with the occupation of Fort White Earth, but Oswald states his list is incomplete.

Fragments of kaolin pipes were found widely over the site. The main concentrations were in excavations of buildings--features 34, 35, and 44 yielded slightly over half of the sample obtained in all excavations and surface collections. Feature 34 alone yielded 107 specimens, but this quantity must be related in part to the fact that this feature was the most extensively excavated. About one-quarter of the sample was retrieved from the plowed surface of the site. Unfortunately these were not separated as to Hudson's Bay Company or

North West Company areas from the beginning of work at the site so that only 25 of 71 specimens can certainly be assigned to Hudson's Bay Company and only two to the North West Company.

Ten percent of the sample came from ash pits and gates along the outside stockade and along the median wall. Another seven percent came from two depressions and one excavated "cellar" (feature 2).

Stone Pipes

Part of a red-brown stone pipe bowl (H68.1.670) came from just below the surface of feature 34 (Plate 9a). The bowl has a thick profile, especially toward the base. Exterior bowl height is 3.8 cm., interior height is 3.1 cm. The exterior surface is highly polished. Just below the rim the outer surface has been cut away to a depth of 0.2 cm. to form a narrow ledge which dips into a deep "V". A circular hole has been drilled or carved through the wall of the bowl immediately below the rim and just above the "V". The stem at the base of the bowl has a green tint. The stone is tentatively identified as serpentine.

Two fragments of steatite pipes (H66.327.273, .279) were found in the plowed area of the North West Company fortification. The former is dark grey in color and includes one square corner which slopes slightly inward toward the top of the bowl where it is rounded (Plate 9b). A shallow but wide groove has been incised around the outside edge 0.45 cm. above the base. There are gouge marks on the inner surface suggesting the manner in which the bowl was hollowed out.

The latter specimen appears to be part of the base of a stone pipe. It is broadly wedge shaped and has only a small hole located slightly off-center. It is decorated along one edge with short incised

lines.

G. MISCELLANEOUS

Miscellaneous Brass

One piece of sheet brass, H65.321.20, was originally rectangular in shape with clipped corners but now is considerably crumpled. Original measurements were 5.3+ cm. long, 3.2 cm. wide, and 0.7 cm. thick. A perforation was created near one corner by driving a round object through the metal. Perhaps it was part of a small kettle lug.

Five small pieces of brass sheeting (H66.327.274; H68.1.145, .326, .468, .944) have cut edges and either were meant for some purpose themselves or are scrap from the manufacture of another item. Four have bevelled edges, a fact which suggests they were cut with a cold chisel. One specimen tapers in thickness from 0.265 to 0.16 cm. and has striation on all surfaces as if it had been filed. Variation in thickness for all five pieces is 0.11 cm. to 0.22 cm.

A small but thick (0.22 cm.) fragment of brass may be part of a gun's brasswork. It is irregularly shaped due to breaking along two edges. On one edge the break cuts across a perforation, leaving a shallow V-shaped notch, Provenience: feature 34.

Among the brass fragments are six thin (0.01 to 0.015 cm.), and therefore very pliable small pieces (H66.327.17, .81A-D, .721). The first and last pieces are cut in the shape of trapeziums and may have been intended for use as ornamental bangles. The remaining four pieces are of nearly equal width, ranging between 1.56 cm. and 1.6 cm., and appear to have once formed a strip of sheeting 8.0+ cm. in length.

Provenience: features 1 and 34.

Six pieces of brass (H68.1.21, .436A and B, .460, .639, .872) from White Earth are crumpled scraps with jagged, torn edges. They range from 0.075 cm. to 0.11 cm. in thickness. Provenience: features 34, 35, 44, and surface of Hudson's Bay Company area.

Brass Rods

H68.1.220: This is a single straight brass rod some 20.32 cm. long and 0.16 cm. in diameter. It was located in feature 35. Both ends are dully pointed, very much like a present day knitting needle; however, the diameter of this rod is smaller than the smallest current knitting needles according to a standard American, Canadian, and French gauge.

H65.321.23: This is a fragment of round brass wire about 12 cm. long and 0.625 cm. in diameter. One end is neatly cut at an oblique angle, as if with a cold chisel; the opposite end has been broken off. A surface find, this artifact was in the North West Company post according to a sketch map drawn by the Museum officials who visited the site on August 26th, 1965.

Copper Scrap

Eleven fragmentary pieces of sheet copper were found. Thickness of the sheet varies from 0.06 to 0.11 cm. Three different areas contributed to this collection: feature 34, surface of the North West Company area, and surface of the Hudson's Bay Company area. H65.321.37 is illustrated in Plate 9m. Catalogue numbers: H65.321.21, .22, .37; H66.327.108, .170; H68.1.10.

Miscellaneous Lead

Seventeen specimens are included in this category under the following catalogue numbers: H66.327.41, .51, .52; H68.1.8, .31, .450, .451, .544, .553, .592, .619, .712, .718, .745B, .749, .773A-C.

Provenience: features 1, 34, 45, and surface of the Hudson's Bay Company post.

Sprue

H66.327.41 and H68.1.31 are short fat pieces of round sprue of diameter 0.55 cm. and 0.6 cm. and lengths 0.7 cm. and 0.8 cm., respectively, which have been cut at both ends (Plate 9r). Such plugs of sprue are left after lead or any metal has been poured into a mold. They are subsequently cut off. Both are from feature 34.

Specimen H68.1.553 may represent sprue from a bullet mold (Plate 9q). The specimen is 8.15 cm. long and has a triangular cross section of 0.255 cm. maximum thickness. Two small projections occur roughly 3.7 cm. apart on one side; these may represent the ingates into the chamber of the bullet and the long section of the channel via which the lead reached the bullet chamber. Provenience for the specimen is feature 1. Similar lead sprue from bullet casting was located at Fort George.

Lead Waste or Spill

The shape of H68.1.8 suggests it hardened either in a ladle or possibly a mussel shell.

H68.1.450 is an enigmatic object (Plate 9n). It is broadly horseshoe shaped and has four irregularly round holes along one edge. Whether the specimen is merely waste and its shape fortuitous, or whether

the design is purposeful and meant for some use such as a kettle lug has been debated. The specimen was found in the plowed field just north of the Hudson's Bay Company's north palisade. Maximum dimensions are as follows: length = 7.48 cm., width = 4.4 cm., thickness = 0.36 cm.

Lead Stock

Two specimens (H68.1.745B and H68.1.749) are portions of bars of lead stock. Maximum dimensions of the two are 2.8 cm. long by 2.1 cm. wide and 0.4 cm. thick and 3.36 cm. by 1.3 cm. by 0.34 cm. thick, respectively. There is extensive surface corrosion on the specimens. Provenience for both is feature 45.

Tin

There are ten scraps of tin in the collection, but only two of these were excavated, from features 1 and 35. The remaining pieces were surface finds. The thickness ranges between 0.06 and 0.13 cm.

Catalogue numbers: H65.321.31, .32, .33; H68.1.128, .246, .459, .467, .905, .936.

One crumpled circular disk (H68.1.936) may be a tobacco box lid, but as it was a surface find its association with the trading posts cannot be proven (Plate 9e).

Graphite

One square piece of graphite (H68.1.219) came from feature 35. The specimen measures 2.56 cm. x 2.3 cm. x ca. 0.95 cm. thick.

Worked Steatite

Three small fragments of worked steatite, H68.1.247A and B and H68.1.251, came from feature 35. All have long grooves or striations

suggestive of saw marks on at least one surface. H66.327.218 is a large piece of grey steatite from the Hudson's Bay Company area (Plate 9c). It has one flat face with nearly parallel striations as would result from cutting, and several small cut faces as well as one fairly deep groove.

Shell

One piece of mother-of-pearl (H68.1.263) appears to have been intentionally shaped, possibly for use as an ornament such as a pendant. It was found on the surface in the North West Company post.

Unidentified Worked Bone Objects

H68.1.293 is part of a broken bone object which apparently was carefully shaped and well polished (Plate 5u). It now measures 3.7 cm. in length and tapers from a broken end towards a rounded and polished end. It is 0.3 cm. thick and has a flat oval cross section. Possibly it is an end tooth from a bone comb, although bone combs so far observed have untapered end teeth.

Specimens H68.1.464 and H68.1.465 may be parts of artifacts. Both were found on the surface of the Hudson's Bay Company post. H68.1.464 is a bone tube 4.15 cm. long, of sub-triangular cross section. One end is broken, but the opposite end appears to have been cut with a sharp implement, leaving a bevelled edge. H68.1.465 is a burned bone fragment ca. 2.3 cm. long by 0.55 cm. thick. Cross section is plano-convex with the exterior compact tissue on the convex surface. There are some cut marks on the compact tissue, and the cancellous tissue appears to have been cut to a flat surface. One end is rounded. Perhaps this specimen is a small piece of a bone handle.

Miscellaneous Glass

H68.1.5, a circular lens fragment, was a surface find most closely associated with the confines of the Hudson's Bay Company. It is 0.2 cm. thick at the edge and 0.6 cm. towards the center. The original diameter would have been 5.1 cm. Three small adjacent flakes have been removed along one edge of the lens. If indeed this piece was contemporary with the fort, it probably was a burning glass such as was supplied with some tobacco boxes for sale at the fort (Account Book 1810-1811, Reel IM467, B/60/d/2/a).

H68.1.571 is a rim sherd of clear glass with a concavo-convex cross section 0.36 cm. to 0.6 cm. thick. It is a surface find and possibly part of a glass bottle stopper. The complete specimen would have been 2.0 cm. in diameter.

H66.327.268 is a clear fragment with a raised design on one surface. It likely is modern, as a nearly complete cup of similar design was found, as was this specimen, on the surface of the site.

Nine small, thin rim sherds of clear glass may represent tumblers or eye glasses. The sherds vary in thickness between 0.09 and 0.18 cm. Rims are plain. Diameters can be projected for three examples, viz., 6.35 cm., 3.49 cm., and 2.54 cm. Distribution is as follows: two sherds are from the surface of the Hudson's Bay Company, one from the surface of the North West Company, two from feature 34, and four from feature 35.

Catalogue numbers: H66.327.77, .86, .235, .236; H68.1.325A, .486, .559H, .325B, .325C.

Thirty-six fragments are curved or flat body sherds. All except two pale green specimens are of clear glass. H68.1.252A has a

dark brown deposit on one surface. The sherds range in thickness from 0.035 cm. to 0.95 cm. Provenience is as follows: three are from the surface in the Hudson's Bay Company, four are from the surface (unspecified), three were in feature 1, seventeen in feature 34, five in feature 35, one in feature 37, two in feature 42, and one in feature 45.

Catalogue numbers: H65.321.28; H66.327.37, .40A-G, .48, .89, .131, .147, .186; H68.1.40B, .252A, .295, .346, .396A-B, .548A, .548B, .559A, .569A, .569B, .569C, .573, .574, .578, .620, .623, .655, .601A, .601B, .710, .946.

Eleven small pieces of glass are melted. Seven were surface finds--one from the Hudson's Bay Company, four from the North West Company, and two unspecified. One piece was found in each of features 1, 34, 44, and 45.

Catalogue numbers: H65.321.27; H66.327.205; H68.1.327E, .337, .406C, .478, .480A, .480C, .570, .686, .743A.

APPENDIX II

ARTIFACT DESCRIPTIONS FOR BUCKINGHAM HOUSE

A. TOOLS AND HARDWARE

Cotter Pin

H66.271.150 is tentatively identified as a cotter pin (Plate 10g). It is made of 0.2 cm. copper wire which has been folded double, leaving a narrow loop at one end. The two ends of the wire have been bevelled to form dull points. Total length of the pin is slightly over 5 cm. It has been bent at a 90° angle about two-thirds of the distance from the pointed ends. It was found within the lower fill in feature 2 near the northwest corner of the cellar.

Ice Chisel (H66.271.1008)

One long, narrow ice chisel was located on the floor of the cellar designated feature 2 (Plate 10q). It is 45.7 cm. long and a maximum of 2.5 cm. wide, tapering to a point. Thickness is uniformly 1.2 cm. throughout the length of the chisel. There is a notch in one side about three-quarters of the distance from the point. The broad end is slightly splayed out from hammering. A very similar specimen is in the artifact collection from Fort George of the North West Company.

Iron Awl

One complete iron awl (H66.271.285) was found within the top foot of fill in feature 2 (Plate 10e). It probably was associated with the superstructure over the cellar if not the cellar itself. The specimen is bipointed and offset at the middle. It is presently 5.35 cm.

long, but due to extensive corrosion this is somewhat of an underestimate.

Such awls were common trade or gift items. According to Russell (1967:319) handles were not supplied with the awls but provided by the user. These iron awls are skeuomorphs of the sharpened splinters of bone, antler, or wood which were used aboriginally to puncture hides, dressed skins, etc., to facilitate sewing.

Steel File Fragments

H66.271.140 is a fragment of a worn out double cut file which presently measures 7.64 cm. in length, 1.47 cm. in width, and 0.395 cm. in thickness (Plate 10a). There appear to be 34 cuts per inch on one diagonal and 32 cuts per inch on the opposing diagonal. Provenience for this specimen is feature 2.

H66.271.206 is the tip end of a single cut file with a square end (Plate 10b). There are an average of 30 cuts per inch. The specimen is 1.25 cm. wide at the end. It was excavated along the east-west exploratory trench at 90 feet west.

H66.271.763 is the tip end of a triangular file which is single cut on all three flat surfaces (Plate 10d). It presently measures 1.7 cm. in length. Provenience is the lower fill of feature 2.

H66.271.825 is the tip of a tapering single cut file with one flat and one curved surface (Plate 10c). It is currently 2.8 cm. long. There are an average of 50 cuts per inch (an estimate only, due to the condition of the specimen). Provenience: feature 2.

Kettle Lugs

A two "earred" lug of sheet brass was located in the plow zone

at 25 feet west along the east-west test trench (Plate 10i). Part of one ear and the base of the lug have been snapped off. The complete ear retains a copper rivet the head of which has been filed off. The brass sheeting is 0.37 cm. thick. The lug was found at 25 feet west along the east-west trench.

H66.271.893 is a complete copper lug from the lid of a trade kettle (Plate 10j). It consists of two perforated discs joined by a loop arched to accommodate a ring. When found, there was a clinched rose head nail with a chisel point in one hole which may have served as a makeshift rivet. Total length of the lug is 6 cm. The discs are 0.16 cm. thick, and the loop is 0.3 cm. thick. Provenience is near the bottom of the fill in feature 2.

Three iron(?) lugs were found in feature 2. H66.271.132B was a rectangular lug which broke across two perforations close to one end. The specimen is 2.7 cm. wide and 0.2 cm. thick. H66.271.860 is tentatively identified as a fragment of a light iron lug (Plate 16o). At present it is a perforated disc with a short extension which may be the beginning of a loop for a ring or bail. H66.271.1038 is a badly corroded and fragmentary lug (Plate 10h). It consists of a loop for a bail attached to a perforated disc. Part of a rivet is still present.

Screw

H66.271.21 was found in the plow zone overlying feature 2 (Plate 11d). It is about 2.5 cm. long. The shank is circular, about 0.5 cm. in diameter, and bears seventeen spiral grooves. The head is of the countersunk type and 0.8 cm. in diameter.

Nails

A large sample (323) of hand wrought nails and nail fragments was excavated at Buckingham House.

The following classification is based on form of head, form of point, and to some extent length and maximum shank dimension. This typology tends to be rather general for two reasons. First, the literature consulted hints at rather than discusses in detail the extensive variations of types. According to the Encyclopedia Americana (1945:683) there were some 300 types of forged nails, each made in ten different lengths, with names for each size. Nor are all authors in agreement on terminology and general types recognized. For present purposes the information utilized comes from the 1945 edition of the Encyclopedia Americana and Technical Leaflet 48 ("Nail Chronology") published by the American Association for State and Local History (Nelson, 1968).

The second reason for the general nature of the classification is the condition of the sample. Due to extensive corrosion, head and point types are often difficult to determine. The "rose head" category may actually include some flat and some upset heads. Measurements, too, are less accurate than might be wished. In most cases only the maximum shank dimension was obtained and is used in the classification. Further cleaning and preserving treatment for much of the sample would facilitate a more thorough typology.

Very nearly 88 percent of the nails were located within the fill of the cellar, feature 2. They occurred throughout the fill although in greater quantity towards the bottom. Many no doubt are from the superstructure over the cellar. The numerous clasp nails, a type

used in finishing work because their heads were driven below the surface of the wood, may have come from the plank flooring overlying the cellar.

The remaining 12 percent were scattered throughout the exploratory trenches and in feature 1 and the defensive structures.

Spikes

Three large specimens over five inches long are certainly in the spike category. All have rose heads and two have flat, splayed out points (Plate 12a, b). One spike lacks a point. These specimens were made from nailing rods 9.5/32 inch by 9.5/32 inch, 9/32 inch by 10/32 inch, and 9.5/32 inch by 10/32 inch.

Because only one shank measurement was made for most specimens, it is not possible to apply the same criteria used in the White Earth sample to distinguish between common nails and spikes, the latter having minimum shank dimensions of greater than 6/32 inch. Simple visual comparison of the samples suggests that there are very few Buckingham House examples of spikes by this criterion. Until further cleaning and more measurements can be undertaken, the remainder of the sample not falling under a special category such as clasp nails, sprigs, and brads is tentatively described under the heading of common nails.

Common Nails

Type R1: Twenty-five nails have sharp points and rather large low circular rose heads. Although most are obviously made with four or more blows, it is possible some "flat headed" nails have been included. The maximum shank dimensions range between 5/32 inch and 8/32 inch, with most specimens being either 6/32 inch or 7/32 inch. Lengths of the nails range between 1.125 inches and 3.09 inches. Six of the specimens

have been clenched. One nail of this type (H66.271.1035) has not been measured. Examples are illustrated as Plate 12c, d, k, and Plate 13a, b, c, k.

Type R2: Three specimens have heads as in Type R1 but flat points. They have shanks of 5.5/32 inch, 6/32 inch, and 8/32 inch, and lengths of 1.59 inches, 2.21 inches, and 2.75 inches, respectively.

Type R3: Three specimens have heads as in R1 and R2 but have blunt points. It is possible that these are the result of use and that originally the points were sharp. Shanks are 2/32 inch and 6/32 inch maximum dimension, and lengths are 2.28 inches and 2.59 inches.

Type R4: Nails with R1 heads but now lacking points account for fourteen specimens (example Plate 13p). Shank dimensions range between 6/32 inch and 8/32 inch. One nail has a round shank of 2.5/32 inch maximum diameter. There are no measurements for one nail fragment of this type.

Type R5: Two examples have square or rectangular rose heads and sharp points. They are made of nailing stock with maximum thicknesses of 5/32 inch and 7.5/32 inch, and are 2.3 inches and 2.8 inches long.

Type R6: One nail, 2.8 inches long with a 7/32 inch shank has a head as in R5 but a flat point.

Type R7: A single specimen has a head as in R5 and R6 but no point. It is made from nailing stock of 8/32 inch maximum thickness.

Type R8: There are twenty nails with small round rose heads and sharp points (examples Plate 12 l, m, n, and Plate 13o). Maximum shank dimensions range between 3.5/32 inch and 7/32 inch. Lengths range between 1.25 inches and 2.9 inches. Three nails are clenched, and one has marks just beneath the head where it was grasped in the vise.

Type R9: Two nails have heads as in R8 and flat points. One is made of nailing stock $4.5/32$ inch maximum dimension, and one of stock $5/32$ inch. The latter nail is 1.9 inches long.

Type R10: Three nails have type R8 heads but blunt points. They are of stock $4/32$ inch, $5/32$ inch, and $6/32$ inch maximum thickness and from ca. 1 inch to 2.5 inches long.

Type R11: Seven nails with type R8 heads have no points (example Plate 13d). These are made of nailing rods ranging from $4.5/32$ inch to $6.5/32$ inch maximum thickness.

Type R12: Six sharp pointed nails have small irregular heads which are possibly a variety of rose head. They are made of nailing stock ranging between $4/32$ inch and $7/32$ inch thick. Range of length is between 0.6 inch and 2.8 inch.

Brads

Type B1: Included in this type are 23 nails with "T" heads and sharp points (examples Plate 12 e, g, h). Maximum shank dimensions range between $4/32$ inch and $6/32$ inch. Lengths are between 2 and 2.9 inches.

Type B2: One nail has a "T" head and a flat point. It is 2.56 inches long and has a maximum shaft diameter of $7.5/32$ inch.

Type B3: Two nails have "T" heads and blunt points (examples Plate 12i, j). One is 2.28 inches long with maximum shank thickness of $5/32$ inch and one is 2.1 inches long with maximum shaft thickness of $7/32$ inch.

Type B4: Ten specimens have "T" heads but their points are either broken or too corroded to be identified (example Plate 12f).

Maximum shank thicknesses are between 6/32 inch and 7/32 inch.

Type B5: Three specimens have sharp points and "T" heads formed by hammering down two opposing sides of a rose head (example Plate 13e). Although there are few examples in the present collection, Nelson (1968) indicates "T" head nails were frequently made in this fashion. The three brads have maximum shank thicknesses between 7/32 inch and 8/32 inch. They are 2.7, 2.175, and 2.15 inches long. The shorter specimen has been clenched.

Type B6: A single specimen appears to have a "T" head manufactured as in B5 but it lacks a point. It is made from round nailing stock of 4/32 inch maximum diameter.

Type B7: One 2.125 inch long specimen has a sharp point and an "L" head. Maximum shank dimension is 6.5/32 inch.

Type B8: The head of this specimen is as in B7 but it has no point. Maximum shank thickness is 7/32 inch. As with B4 and B6 original length may have been less than 2 inches, indicating sprigs rather than brads.

Sprigs

Type Sp1: Included are five specimens with "T" heads and sharp points. Maximum shank dimension in each case is 5/32 inch. The sprigs are from 1.6 to 2.0 inches long.

Type Sp2: There are two examples of sprig length with "L" heads and sharp points. Both have maximum shank dimensions of 5/32 inch. One is an inch long and one is 1.5 inches long.

Type Sp3: Three examples have "L" heads and flat points (example Plate 13m). Two have shanks 5/32 inch maximum thickness and

one is $4/32$ inch maximum thickness. Lengths are 1.9, 1.4, and 1.2 inches.

Special Purpose Nails

Most of the nails from Buckingham House are of the clasp type with gable shaped heads.

Type C1: Eighty-one clasp nails have sharp points (examples Plate 13g, h, j, k, l). Maximum shank dimensions range between $4/32$ inch and $8.5/32$ inch, with the greatest number, some forty-seven nails, being of stock $7/32$ inch thick. Lengths of the nails range between 1.5 inches and 3.25 inches. Fifteen specimens are clenched, and one has been twisted lengthwise at its tip. On four specimens with clasp heads and sharp points it was not possible to obtain reasonable measurements due to corrosion.

Type C2: Six clasp nails have flat points (example Plate 13i). Shanks range between $5/32$ inch and $7/32$ inch in thickness. Lengths are between 2.05 and 3.125 inches.

Type C3: Eight clasp nails now have blunt points although it is possible that the blunting is a result of use. Shank dimensions: $5.5/32$ inch, $6/32$ inch, and $7/32$ inch. Range of lengths: 1.9 inches to 3.25 inches. One specimen is clenched.

Type C4: Thirty-seven clasp type nails have broken and/or heavily corroded points. The shanks range between $5/32$ inch and $9/32$ inch, but 40 percent are $7/32$ inch maximum diameter.

Miscellaneous Nails

Four nails do not appear to fit into the above classification. Two blunt pointed specimens have large flat heads which are skewed in

one direction over the shank. One is 3.15 inches long, and has a shank $7.5/32$ inch thick. One has a shank of $8/32$ inch thickness and is 3.2 inches long.

The remaining two nails have two opposing sides of their heads bent irregularly upwards. Perhaps these were rose heads distorted by being pried out of position. One specimen, of shank $7/32$ inch and length 2.78 inches, has a sharp point. The second nail has no point and no shank measurement was made due to the condition of the specimen.

Shank Fragments

Twenty-two fragmentary nails lack heads but have sharp points. Maximum thickness of the remaining shanks are between $2.2/32$ inch and $9/32$ inch.

Three headless shanks have flat points. Shank dimensions are $4.5/32$ inch and $8/32$ inch.

Two headless shanks have blunt points and shank dimensions of $5/32$ inch and $7/32$ inch.

There are forty shank fragments lacking heads or points. The maximum shank dimensions of these nails range between $3/32$ inch and $8/32$ inch. Whether or not these dimensions are appropriate to the whole specimen cannot be determined.

Bone Fleshing Tool

Fragments of a bone fleshing tool (H66.271.434A) were found within the upper fill of feature 2 (Plate 10f). Only the tip end with six short teeth remains. The bone is heavily calcined.

B. HUNTING AND DEFENSE

Butt Plate

H66.271.671 is a fragment of a brass gun butt plate of which one end has been snapped off and the opposite end has been melted (Plate 11e). Two square holes for spikes are cut near the margins of the plate. Maximum width of the remaining piece is 4.67 cm. Maximum thickness is 0.148 cm. It was located in feature 2.

A quote from Hanson (1955:40) is pertinent to the identification of this specimen:

All Northwest guns had flat butt plates of heavy sheet brass with a short flat top tang. As late as 1826 this plate was fastened on with small square iron spikes, six or seven being set around the edge and one driven in the top tang. Later specimens of HBC guns are distinguished by five butt plate screws similarly placed--four around the butt plate proper and one in the tang....

The conventional pair of screws--one in the plate and one in the tang--are found on all other types sold or given out in the United States, even on the English-made models.

Hanson also indicates that the William Wilson firm was the principal supplier of Northwest guns to the Hudson's Bay Company from 1760 to 1820 (1955:17).

Brass Gun Worm

Eight coils of a brass gun worm were found very near the center of the cellar, feature 2, well down in the fill (Plate 11f). It is made of wire 0.246 cm. thick and presently is 4.4 cm. long. At the tip it is ca. 1.0 cm. wide and increases in width to 1.16 cm. at the

broken end.

Frizzen Spring Fragment

The tip end of a frizzen spring (H66.271.313) with a hole for a screw was excavated in the upper sandy fill of feature 2 (Plate 11c). Present maximum width is 0.94 cm., and thickness is about 0.3 cm. This size is rather small, and the specimen may be from a pistol frizzen spring rather than a gun.

Triggers

H66.271.968 is a complete trigger from feature 2 (Plate 11a). Total length of the specimen is about 4 cm. The pull is slightly curved and oval in cross section. A flat sub-triangular extension above the pull bears the pivot hole plus a second very small perforation.

Specimen H66.271.618 may be the pull from a broken trigger (Plate 11b). It is bent nearly at right angles midway along its length. It was found in the top foot of fill over feature 2.

Lead Musket Balls

Only three lead balls of musket size are recorded. Two, H66.271.291 and .320, are from feature 2. The former (Plate 10p) is spent, and its present diameter of 2.2 cm. is not representative of its original size. The latter is not perfectly spherical, but measures 1.6 cm. by 1.1 cm. at diameters taken at right angles. A third ball, H66.271.495, was found in feature 1 (Plate 10o). It has a diameter of 9.14 cm. and, other than a small perforated boss at one pole, is perfectly spherical.

Small Lead Shot

Twenty-eight pieces of small shot were located, ten in feature 1 and eighteen in feature 2. Size ranges between 0.378 cm. and 0.54 cm. in diameter. Actually one piece measured 0.61 cm., but it is quite asymmetric and therefore untypical of the sample. The bias in provenience no doubt reflects excavation technique to some degree, as features 1 and 2 were excavated with hand tools, whereas the other, mainly exploratory, trenches were shovel-shaved and screened only.

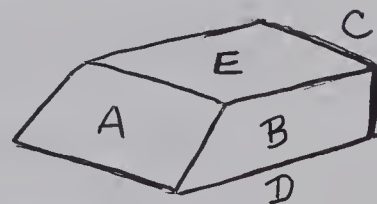
Catalogue numbers: H66.271.354, .373, .380, .409, .477, .482, .504, .657, .681, .753, .797, .897, .948, .952, .1052, .1054. H66.271.549 and .1023 are also catalogued as small shot but are more likely spherical drops of fused mud plaster as they are hollow.

Gunflints and Spalls

The following classification of gunflints takes into consideration the information concerning origin and manufacture presented by Woodward, Smith (translator), and Hamilton in the Missouri Archaeologist (December 1960) and Hamilton (1964). Important distinctions made by these authors are as follows:

Parts Distinguished in a Gunflint:

- A. the sloping facet
- B. the sides
- C. the back or heel
- D. the under surface (rather convex)
- E. the upper facet, between the tapering edge and the back.



Gunspalls are distinguished by being made on single flakes. They exhibit pronounced bulbs of percussion (Smith, 1960:46). Hamilton (1964:52-53) distinguishes three subtypes, two early types made of chert and float flint, and a third late type made of quarried flint. The early types probably were made of individual spalls struck from pebbles which were then dressed up with some secondary chipping about the heel. Hamilton suggests the later type may have been made from core remnants left from the manufacture of gunflints.

Gunflints are distinguished as being made on blades detached from cores. English gunflints display little or no secondary chipping along the sides and across the back. The backs are square, and each flint appears to owe its form almost entirely to primary flake scars. French gunflints are distinguished from the English by secondary chipping along the sides and around the back and thus have rounded backs and a "gnawed" appearance in contrast to the smooth planes that resulted from the primary chipping (Smith, 1960:46). Woodward (1960:35) notes that French flints are thinner and flatter than the English made types.

Color of Flint: English flints are classified as being black. French flints are predominantly blond (honey or taffy color, according to Woodward). While these distinctions may be suitable for the sites discussed in the literature above, sites which are all south of the upper Missouri area, they seem less clear for the area presently considered. Here some flints appear to be manufactured using an English technique on a distinctly brown flint.

Buckingham House Specimens

Most gun flint material from Buckingham House has been heavily

burned, rendering it opaque, grey, and quite brittle.

One flint, H66.271.31, is identified as English in origin on the basis of manufacture technique; it is made on a blade but has no retouch on the heel (Plate 10k). Since the specimen is burned, the criterion of color cannot be applied. Dimensions of the specimen are 3.1 cm. by 2.9 cm. Provenience: feature 2.

Four specimens (H66.271.481, .509, .734, .1080) are certainly gunflints made on blades as opposed to gunspalls. All are burned and therefore grey and opaque. Because they are shattered, it is not possible to distinguish English from French techniques of manufacture. Provenience: feature 1 and surface.

Two gunspalls (H66.271.93 and H66.271.508) were found (Plate 10n, 1). The latter is burned and opaque. It measures 2.556 cm. by 2.3 cm. The former is medium brown in color, and in spite of its great thickness at the positive bulb of percussion it exhibits considerable translucency. Dimensions are 2.874 cm. across the bulb and a maximum of 2.11 cm. along the bulb. These are probably Hamilton's third subtype of gunspalls--those made of quarried flint--which were made up to the close of the flintlock era. Provenience: feature 1.

The remainder of the sample consists of fragments of burned and shattered gunflints or gunspalls (Plate 10m) and small flakes, mostly unburned, such as would be detached by the flint striking steel, or by retrimming the flint.

There are sixteen specimens of the former type and fourteen of the latter. Two of the flakes, H66.271.286 and .1151, although unburned, are opaque and may not be flint or even from gunflints. Otherwise the unburned flakes are medium brown in color with greyish or

black overtones. They are translucent and have a matte surface.

<u>Flakes</u>	<u>Provenience</u>	<u>Shattered Specimens</u>	<u>Provenience</u>
H66.271.286	5S65W	H66.271.437	Feature 2
H66.271.300	Feature 2	H66.271.466	Feature 2
H66.271.516	Feature 2	H66.271.473	Feature 2
H66.271.541	Feature 2	H66.271.485	Feature 1
H66.271.579	Feature 2	H66.271.486	Feature 1
H66.271.585	Feature 2	H66.271.578	Feature 2
H66.271.639	Feature 2	H66.271.580	Feature 2
H66.271.640	Feature 4	H66.271.638	Feature 2
H66.271.642	Feature 2	H66.271.659	Feature 2
H66.271.1148	ON40W	H66.271.738	Feature 1
H66.271.1149	Feature 1	H66.271.739	Feature 1
H66.271.1150	ON160W	H66.271.740	Feature 1
H66.271.1151	55N70W	H66.271.1050	ON160W
H66.271.1152	ON210W	H66.271.1064	Surface
		H66.271.1079	Surface
		H66.271.1080	Surface

Metal Trade Points

Two stemmed iron trade points were located in excavations.

H66.271.256 was found in feature 4 (Plate 11g). It is made of sheet 0.12 cm. thick. Total length of the specimen is 4.8 cm. and maximum width at the shoulder is 1.8 cm.

The second point, H66.271.452, is badly corroded (Plate 11h). It was found in the upper fill of feature 2. The point is 0.13 cm. thick, 2.8+ cm. long and 1.6+ cm. wide at the shoulder.

C. BUSINESS

Slate Pencil (Plate 11j)

The use of slate pencils is indicated by a single tip fragment (H66.271.542). Currently it is 2.5 cm. long from its low, bevelled tip to the broken end. Unlike specimens recovered at White Earth, this specimen has a round cross section of 0.57 cm. maximum diameter.

Caywood indicates that slate pencils with four to six sides as well as round cross sections were found at Fort Vancouver. Provenience: feature 2.

Rope

Several charred fragments of rope (H66.271.1016A, B, C) were found under the planking forming the floor of the cellar in feature 2. The rope is made of individually twisted strands which are braided together.

Steel Needle Fragment

A short length of steel rod (H66.271.502) which tapers from a diameter of 0.13 cm. to a sharp point is tentatively identified as a needle tip (Plate 11i). It was found in feature 2.

Ornate Clasp Knife

This is a rather beautiful but poorly preserved piece (Plate 11k). It was found in four fragments (H66.271.850A-C) under collapsed timbers in feature 2. Unlike many illustrated specimens (for example in Russell, 1967), this knife appears to have had two short blades which pivoted on pins at each end rather than one long one. One blade, still in place, appears to have had a sharp point. The other blade is fragmentary but seems to have had a rounded end.

The case for the blades is ornamented on either side with a design of undulating vines, flowers and leaves, and flowers growing on short stems at each end. A pin secures the two sides midway along the length of the knife. The knife is slightly curved lengthwise. Length is 10 cm., width varies between 1.2 cm. and 1.4 cm.

D. HOUSEHOLD

Salt Glazed Stoneware

Ceramic sherds were rare at Buckingham House. Twenty-five sherds of undecorated cream-colored salt glazed stoneware were found. Most were from feature 1, one came from the plow zone over feature 2, and two were found on the surface of the site. The majority are body sherds. Two bear part of a short circular pedestal base and six are fragments of sherds with folded over rims. Similar sherds are in the Fort George and White Earth collections.

Several of the fragments were fitted together to form a small bowl or cup with a folded rim and a short pedestal base (Plate 14a). Projected diameter at the mouth of the vessel is 5 cm., but it increases in diameter slightly toward the bottom. The vessel stands 4.96 cm. high.

These pieces may be from the crockery George Sutherland brought inland as factor of Buckingham House in 1797. He specifically complained of the lack of anything but metal dishes at the inland posts of the Hudson's Bay Company; thus the small number of sherds recovered is not surprising.

Catalogue numbers: H66.271.80, .217, .496, .521, .617, .743, .760A-J, .760, .779A-B, .780, .782, .783, .784, .1082, .1089.

Earthenware(?)

A single sherd, H66.271.693, is tentatively identified as earthenware. The fragment is from the base of a vessel with a circular foot. Projected diameter of the base is 5.7 cm. It was found in feature 2 and appears to have been burned.

Glass Bottle Fragments

A small glass bottle is represented by three and possibly four sherds of clear glass. One base fragment (H66.271.88) and two curved body sherds (H66.271.92 and H66.271.101) can be fitted together with only a little difficulty encountered due to distortion of H66.271.92 through slight melting. The bottle represented is ca. 4 cm. diameter at the base and 3.32+ cm. high. The base has a maximum thickness of 0.9 cm.

In spite of chipping a pontil mark is still visible at the apex of the basal kick, indicating the bottle was free blown (Plate 14e). The sides of the bottle are relatively thin, varying between 0.17 cm. and 0.10 cm. All three fragments are closely associated--in or near feature 1.

A fourth fragment, H66.271.91, may well be part of the above bottle (Plate 14f). This is part of a neck with a flanged rim of clear glass 0.17 cm. thick. It has been slightly distorted due to heat and bears a heavy patina. Originally the diameter of the neck opening would have been slightly less than 2 cm. Like the three sherds above, it was found in the small ash and charcoal deposit designated feature 1.

Also recovered from feature 1 were two small melted blobs of clear glass which appear to be collapsed bottles (H66.271.102 and H66.271.103). The former specimen still retains vestiges of a neck with a flanged rim, very like the above bottle in design and size (Plate 14g).

One small fragment of clear glass (H66.271.840) bears part of an inscription. Parts of three raised letters appear along one broken edge, but it is not possible to discern their proper orientation. The only complete measurement which can be made indicates the middle letter to be 0.55 cm. wide. This fragment was recovered from feature 2, the

single large cellar excavated.

On January 12, 1796, William Tomison, writing in the Edmonton House Journal, mentions receiving a box of medicines from Buckingham House. Among other things, the box included a bottle of hartshorn, a bottle of "Turlington", a bottle of lavender, and twenty-four small vials and corks (HBRS, 1967:24-25). The "Turlington" bottle is known from other sites on the North Saskatchewan--Fort George, Fort White Earth, Fort Carlton. It is described in the literature as a small clear glass bottle of pear- or fiddle-shape with a stepped outline. The raised inscription on all bottles reads:

BY THE	ROBT
KINGS	TURLI
ROYAL	NGTON
PATENT	FOR HIS
GRANTED	INVENTED
TO	BALSOM
	OF
	LIFE

It may be that the one monogrammed specimen recovered is from such a bottle.

Interestingly, the medicines were used not only for the Company's servants but were traded to the Indians, at least by Tomison, who mentions averaging 100 made beaver trade in medicines per year (HBRS, 1967:25).

Two other small glass fragments may be from small bottles. H66.271.556 is a small curved corner sherd of clear glass. It is 0.2 to 0.23 cm. in thickness. H66.271.607 appears to be a small fragment of a flanged rim, possibly from a bottle. The glass is transparent but of a light green tint. This specimen was found in the cellar fill of feature 2.

Miscellaneous Glass Sherds

Other sherds of clear glass were recovered, but generally these are very small and from non-distinctive parts of vessels. Eight are so small and thin as to have resulted from shattering. All of these, catalogued under H66.271.610, .658, .717, are from the cellar fill in feature 2.

Of the remaining clear sherds twenty-two are thin (range from 0.05 cm. to 0.19 cm. in thickness) and curved, suggesting they may be from bottles such as those described above. They could as well be from tumblers, wine glasses, etc., but the Journals would lead one to expect otherwise. George Sutherland mentions having brought a small box of crockery inland in 1797 (he was then Factor at Buckingham House) in order that he might serve his neighbors wine or tea in something other than a tin pot. Having to use the latter utensil he found particularly galling, "... especially as when they treat us we see Silver, China and Glass on the Table" (Letter of August 10, 1798, HBRS, 1967:126).

Provenience: Feature 1--nine specimens; Feature 2--six specimens; ON14OW--two specimens; 5S65W--two specimens; 35N75W--one specimen; 30N75W--one specimen; Surface--one specimen.

Catalogue numbers: H66.271.83, .89, .90, .94, .96, .97, .99, .100, .233, .234, .279, .283, .408, .469, .609, .662, .665, .727, .855, .856, .958, .1075.

Possibly a lens of some sort is represented by a good sized piece of flat glass (H66.271.491), which varies from 0.49 cm. to 0.56 cm. in thickness. As with much of the glass described above, this specimen was found in feature 1.

Catalogue numbers H66.271.95, .235, .468, .479, and .1049

include seven small fragments of clear glass which are either flat or distorted by heat. Thickness varies from 0.05 cm. to 0.1 cm. with the latter being the mode. Provenience: feature 1, 2, east-west trench; H66.271.1049, unknown.

A few fragments of light green tinted glass were found. The color is caused by the chemical properties of the glass; i.e., it is "natural" glass made from silica with a soda or potash alkaline base which still retains metallic impurities (Cotter, 1968:30). Seven sherds are catalogued under six numbers (H66.271.213, .297, .1053, .1066, .1076, .1077). The two fragments in H66.271.1053 are exceedingly small. The remaining pieces are all flat and range from 0.165 cm. to 0.13 cm. in thickness. With the exception of H66.271.1053 and H66.271.1066 all sherds have one straight cut edge. These may be fragments of small trade mirrors such as are found at the contemporary and neighboring North West Company site of Fort George. Woodward (1965:2) refers to mirrors as common trade items. Parchment rather than window glass was used in the original construction of Buckingham House (Entry of November 12, 1792, B.24/a/I, Reel IM18).

Heavily patinated transparent dark olive green glass is represented by twenty-nine sherds. The color suggests these may have come from tall hand-blown liquor bottles. Cotter (1968:30) states that green glass was used primarily for bottles, flasks, and windows. Variations in intensity of color among sherds may indicate that several bottles are represented. The present sample varies considerably in thickness from 0.13 cm. to 0.71 cm. Many sherds taper. With five exceptions, the sherds are curved or flat body sherds--perhaps the former are from round bottles or shoulders of bottles, and the latter

from square or rectangular bottles. Variations in thickness no doubt indicate relative position on the whole specimen.

Four sherds (H66.271.216, .781, .917, .1074) are from bottle corners and indicate both sharp cornered and round cornered vessels. The first specimen is considerably thinner (0.23 cm.) than the remaining three.

Judging by its curvature, specimen H66.271.133 is from the neck of a long necked bottle. It is uniformly 0.17 cm. thick and 4.47 cm. long.

Provenience: Feature 1--four; Feature 2--twelve; ON45W--two; ON40W--one; ON100W--two; ON130W--one; ON140W--one; 20S75W--one; 135W (exploratory trench)--two; Surface--three.

Burned Bone Handle(?)

A burned bone object, tentatively identified as part of a handle, came from near the center and bottom of feature 2 (Plate 11, 1). There are no perforations to indicate that it was ever attached to another object. Total length between two finished, flat edges is 7.31 cm. Maximum thickness is 0.55 cm., all of compact tissue, and maximum remaining width of the slightly arched specimen is 2.5 cm. The outer surface is polished and decorated with portions of five sets of three concentric circles around a shallow perforation. The circles are not uniform, but for an average set the outer circle is 2.3 cm., the middle 1.8 cm., and the inner 1.15 cm. in diameter. Slight bevelling at each end is the only major modification of the unpolished, concave inner surface.

Fork Tines

Specimen H66.271.767 consists of a sand and rust cast of a two tine fork (Plate 14d). The tips of the tines have broken off, leaving about 5.6 cm. of the original length of the artifact. Width of the fork across the tines is now 1.8 cm. This specimen was found near the bottom of the fill in feature 2.

E. CLOTHING AND ORNAMENT

Brass "Beaver" Buttons

Two brass coat-sized buttons and one of waistcoat size bear stamped designs consisting of a hatchured cross within a circle with four small fat animals in each of the pie-shaped quadrants. In spite of their short tails and rather long legs on the waistcoat button the little animals are probably meant to be beaver. The outer circle with its ornamentation excepted, the design appears to be an adaptation of that on the shield depicted on a Hudson's Bay Company flag used at Fort Vancouver (Caywood, n.d.: Plate 1).

One of the large buttons, H66.271.255, was cast and has a mould seam across its back (Plate 14h). An eye, now missing, was set into a foot or boss moulded with the button. The button is flat and circular, 2.58 cm. in diameter and 0.132 cm. thick. It is similar to Olsen's type E dated 1750-1812.

The two remaining examples are brass faces from two piece buttons which probably had bone backs. An example of such a composite button is in the Pine Island (1786-1794) collection, and bone blanks for making backs are known from several sites including contemporary Fort

George.

H66.271.453 is badly corroded (burned) and the design is mostly obliterated (Plate 14j). It is about 2.2 cm. in diameter and 0.06 cm. thick.

The waistcoat button, H66.271.573, is 1.63 cm. in diameter and some 0.6 cm. thick (Plate 14i). Design elements are far less detailed on this smaller specimen. There are traces of gilt on the face.

Both faces were slightly convex originally. Provenience for the first specimen was ON165W (exploratory trench), and for the latter two the cellar designated feature 2.

Plain Brass Buttons

H66.271.792 is an undecorated flat disc of brass, 2.42 cm. in diameter and 0.132 cm. thick. An eye which is now missing was held in a low boss or foot. Some tiny yellow flecks on the face may indicate this coat button was originally gilded. It was recovered from the lower half of the fill in feature 2.

H66.271.785 is an undecorated waistcoat sized button of brass. Concentric spin marks are evident around a low foot on the back (Plate 14m). The eye is missing. The button is 1.634 cm. in diameter and 0.078 cm. thick. It was found in the sand, ash, bone and charcoal deposit of feature 1.

Ornamented Brass Button

H66.271.582 is the only complete button recovered. Again it is a flat circular disc of brass. On the back an eye of brass wire is set into a low foot. Spin marks are faintly visible on the back. A rather abstract incised flower design fills the face of the button

(Plate 14, 1). Diameter of the disc is 1.75 cm. Thickness of the metal is 0.09 cm. It was found in the lower portion of the cellar fill of feature 2.

White Metal Button

One button stamped with the Hudson's Bay Company initials, motto, and fox was found in feature 1 (Plate 14k). It is of a white metal, possibly pewter, and although presently bent was originally a flat circular disc 2.56 cm. in diameter. An iron eye of which only two ends remain was set into a deep foot. There is a short mould mark on the foot. Some letters are stamped in circular fashion around the foot. They are rather obscure, but seem to include "...S...I...", and probably are from the same mark as crested Hudson's Bay buttons at Fort White Earth (see above page 172). The metal disc is 0.1 cm. thick.

Copper Ring (H66.271.304)

One plain copper ring was found in association with the cellar fill of feature 2 (Plate 14n). Originally it had been covered with gilt, a few traces of which can still be observed. There are no markings of any kind on the band. Exterior diameter of the band is 2.04 cm., interior diameter is 1.8 cm. Maximum thickness of the metal is 0.14 cm., but it is tapered to a thin edge. The band is 0.354 cm. wide.

A second plain copper ring, H66.271.319, was found in the sand fill in the upper half of feature 2. The outer surface of the band is convex and tapers toward the edges. Thickness of the band is 0.136 cm., width is 0.3 cm. Exterior diameter is 1.85 cm. and interior diameter is 1.64 cm.

Ornate Cross (H66.271.848)

This artifact (Plate 14o, p) was found in situ nearly at the bottom of feature 2 in charcoal, ash, sand, and plaster fill. It is made of cast brass and ornamented with six set stones as well as a cast design consisting of a narrow border design, raised bosses at each angle, and a single flower or sunburst design surmounting the top stone.

The stones are set in undecorated collets or bezels, four vertically and two horizontally. They are flat and round, with an orange-peel texture, and appear opaque and purplish. Probably they are glass and have been altered by fire. Size varies from 0.63 cm. to 0.57 cm., with the latter being considerably smaller than the collet in which it is set.

The back of the cross is undecorated, but has six small bosses directly opposite the set stones, and near the apex a cast, perforated shank to facilitate suspension.

Maximum dimensions of the cross are:

length of vertical portion:	4.36 cm. ,
width of vertical portion:	1.15 cm. ,
length of horizontal bar:	3.27 cm. ,
width of horizontal bar:	1.1 cm. ,
thickness of metal:	0.2 cm.

Trade Beads (Plate 14q-t; 15b)

The criteria used to analyze beads and the resultant typology are included with the description of beads found at Fort White Earth. At Buckingham House beads were found mainly in features 1 (11 percent) and 2 (81 percent). Excavation in the south stockade trench yielded 5 percent of the sample, 2 percent came from the surface of the site, and the remaining 1 percent came from the east-west exploratory trench and

just outside of the north stockade. This distribution reflects excavation technique as well as original provenience.

Faceted Emerald Green Glass Band

One fragmentary specimen (H66.271.406) must certainly have served some ornamental purpose. The small portion remaining indicates a projected diameter of 2.0 cm. or very slightly less. Cross-section is roughly triangular with the widest side being the interior surface of the band (0.18 cm. thick or high). Thickness decreases from the interior to the outer circumference--width of each of the two long sides of the triangle is 0.22 cm. The latter two sides are ornamented with long, low relief facets. Provenience is feature 2.

Textiles

One very small piece of wool(?) fabric (H66.271.454) was found in the upper fill in the northwest corner of feature 2. The sample is charred and exceedingly fragile. The weave is a simple over and under pattern. Original color is unknown.

A scrap of charred cotton(?) cloth (H66.271.771) was excavated near the bottom of the northwest corner of the same cellar (Plate 15a). It also is an over-under weave. The textile lay directly on a short length of extremely corroded iron. Original size and shape of the latter cannot be determined.

Tinkling Cones

Ten copper and one heavily corroded iron tinkling cones were found. The iron specimen came from feature 1, nine of the copper specimens were from feature 2, and one possible tinkler was found in the

west palisade trench. The specimens range between 1.1 cm. and 3 cm. in length. The mode is 1.61 cm. Thickness of the sheet used ranges between 0.04 and 0.1 cm., with the mode at 0.04 cm. One of the copper tinklers still has a length of bound rawhide inside (Plate 14v, w). Catalogue numbers: H66.271.126, .347, .471, .414, .463, .464, .494, .537, .539, .600, .603.

F. RECREATION

Pipe Bowls and Fragments

Pipe bowls are represented by forty-three specimens. Among these is one complete bowl (H66.271.498) bearing a monogram on the body (facing the smoker) and an initial on either side of the spur or heel. The monogram is discussed below. The rest of the sample (less three which cannot be located) is made up of seventeen rim sherds; nineteen body sherds, three bearing parts of monograms and one with incised lines; and one enigmatic specimen of fine clay which may be one or two partially fused bowls (Plate 15k). The complete bowl, three rim sherds (H66.271.339, .360, .1072), and possibly one body sherd (H66.271.619) lack any discoloration suggestive of extensive use in smoking.

The one complete pipe bowl (Plate 15c) is 3.9 cm. in height, and 1.85 cm. x 1.76 cm. in diameter. The spur is 0.7 cm. wide and 0.55 cm. high. It is possible to project diameters for several rim sherds. Pipe bowls of approximately 2.54 cm. (six specimens) and 1.9 cm. (four specimens) exterior diameter are indicated.

The following monograms on the backs of bowls were noted in the sample:

H66.271.199 is a heavily discolored rim sherd bearing a nearly complete monogram consisting of the initials "WM" with curliques above and below, the whole being surrounded on sides and bottom by a stamped semi-circle (Plate 15i).

H66.271.498, .595, .741 have similar monograms consisting of the initials "TD" with curliques above and below with portions of a stamped circle on either side (Plate 15c-e).

H66.271.308, .544 and .660 (the first two are from the same pipe) bear parts of "TD" monograms stylistically different from the above category, mainly in the treatment of the curliques above and below the initials (Plate 15f, g). This difference may indicate that the pipes come from different makers (many different factories used a "TD" monogram), or merely that the pipes were made in different molds at the same factory.

One rim sherd (H66.271.922) has two parallel lines incised around the body of the bowl about 1 cm. apart (Plate 15j). This feature may be manufacturer's decoration, but most likely represents a trader's (Indian's?) creativity. The condition of the bowl suggests it was well used prior to breakage and discarding.

Clay Pipe Stems

A sample of 141 fragments of kaolin pipe stems was recovered in excavations or on the surface of the site. These fragments ranged between 1.0 cm. and 10.2 cm. in length. Over 80 percent of the sample was less than 4.6 cm. in length.

Most fragments are from some indeterminable portion of the complete pipe stem. Exceptions are eight fragments with one expanding

end, indicating the point of juncture with the pipe bowl, and twenty-one fragments which include the bit end of the stem. One of the former group has a square spur with one of the initials "WM" on either side (Plate 15h). The bit ends can be divided into fifteen fragments with tapered bit ends unaltered since they were manufactured (Plate 15m); two fragments with unaltered and untapered bit ends, one of which has a red-brown pigment 4 cm. along the stem from the bit end (Plate 15o); two broken fragments with carved secondary tapering bit ends (Plate 15, 1); and two broken specimens showing erosion and slight indentations around the stems just in the position in which they would have been held between clenched teeth.

Unlike comparative collections from Fort George, White Earth and Pine Island, most of the fragments in the Buckingham sample are heavily discolored. The discoloration may result from heavy smoking, but may also be a result of subsequent burning in hearths or in the burning of the fort after abandonment.

Steatite Pipe Bowl Fragment

Part of a steatite pipe bowl may be represented by a small rim piece found deep in the fill of feature 2 (Plate 15p). The piece has a thick flat rim some 0.972 cm. in width. Projected exterior diameter of the bowl to which the piece belonged is about 4.0 cm. The inner diameter would appear to be about 2.0 cm. Other fur trade sites such as White Earth, Fort George, and Pine Island have yielded pieces of steatite pipes. At Pine Island, at least, the archaeological evidence suggests the making of steatite pipes constituted a "cottage industry" carried on by the men of the fort.

G. MISCELLANEOUSMiscellaneous Fragments of Glass

Two slivers of glass (H66.271.608, .641) appear to be from rims of vessels. The former is of light green tinted glass 0.215 cm. thick. It may be from a narrow flanged rim at the mouth of a bottle, or perhaps from the circumference of a glass stopper for a bottle. The latter specimen is of clear glass and cannot be accurately measured. It does look a great deal like a tumbler rim in spite of the above Journal reference (above, page 219). Both are from the cellar fill in feature 2.

Nearly four dozen fragments of glass are fused and/or weathered to a considerable degree, obviating further identification. Sherds are clear, light and deep olive green, or varying shades of grey--the latter likely due to impurities present when melting occurred. Provenience: Feature 1 (H66.271.109, .798); Cellar fill in Feature 2 (H66.271.114, .123, .147, .167, .384, .385, .455, .605, .687, .994A-C); ON45W (H66.271.10); ON210W (H66.271.128); 10S75W (H66.271.1051); Surface (H66.271.1059).

Lead Seal(?)

H66.271.298 is a circular disc 0.95 cm. diameter and 0.4 cm. thick with a wire loop (Plate 16n). The specimen is corroded. It was found in the plow zone overlying feature 2.

Lead Waste

Four pieces, H66.271.322, .654, .776, .1114, were located in feature 2, along the east-west trench, in feature 1, and along the north trench, respectively. They are fairly large, measuring 1.7 cm. to 3.85

cm. in length (example, Plate 16r).

Ornamented Brass

Three short lengths of ornamented brass strip and one small disc were found in the fill of feature 2.

H66.271.830 is 0.04 cm. thick and 0.9 cm. wide (Plate 16, 1). Both ends are cut. Three parallel raised bands running lengthwise constitute the decoration.

H66.271.342 is 0.028 cm. thick and 0.83 cm. wide (Plate 16d). It is concavo-convex in cross section with a narrow row of shallow square depressions stamped along each edge. Slight lengthwise curvature suggests it may have belonged to a circular band.

H66.271.975 appears to be part of an ornamental rim, perhaps from a lamp (Plate 16h). It is 0.02 cm. thick and 2.5 cm. wide. The stamped decoration consists of a row of small evenly placed round bosses near one edge and a row of larger teardrop and narrow crescent shaped bosses alternating along the opposite edge. A similar specimen is in the Fort George collection.

H66.271.583 is a small circular brass disc with a central perforation surrounded by two concentric grooves (Plate 16k). Diameter of the disc is 0.75 cm., thickness is 0.03 cm. It was found in feature 2.

Brass Wire

One short piece of heavy brass wire (H66.271.766), 0.51 cm. wide and 0.27 cm. long, was found in the northwest corner of feature 2, within the second foot of fill laid down (Plate 16c).

H66.271.675 is a small circle of brass wire. The wire is 0.07

cm. thick. Exterior diameter of the circle is 1.1 cm. The specimen was found in the western half of feature 2 well down in the fill. It is quite fragile and may have served an ornamental function.

Seven fragments of cut brass were found in the fill in the western corner and center of feature 2. They are briefly described:

H66.271.314: dimensions are 0.1 cm. thick and 1.93 cm. maximum width. It is bent across the width as if to fit over an edge or corner.

H66.271.392 is a folded strip ca. 1.7 cm. long, 1.2 cm. wide and 0.07 cm. thick (Plate 16b).

H66.271.421 is a small flat perforated disc of copper (Plate 16j). Diameter of the specimen is 1.6 cm., thickness of the metal is 0.04 cm.

H66.271.450 is a narrow coiled fragment 0.08 cm. thick such as would result from trimming with metal shears.

H66.271.490 is a rectangular piece 2.936 cm. long by 1.3 cm. wide by 0.184 cm. thick (Plate 16g). One end has been bent off. Near the opposite end is a small drilled perforation.

H66.271.800 is a half disc 0.09 cm. thick and 2.1 cm. in diameter (Plate 16a).

H66.271.1084 is a cut piece of brass 1.744 cm. long, 0.91 cm. wide, and 0.06 cm. thick (Plate 16i). There is a single perforation at one end made by punching through a square nail. The piece may have been used as an ornamental bangle. It was found on the surface of the site.

Four scraps of brass ranging in thickness from 0.054 cm. to 0.1 cm. were found in the fill of feature 2. One, H66.271.371, is very brittle. Remaining specimens are catalogued as H66.271.413, .536, and

.613.

Several pieces of bright green brass or copper oxide were found in the lower half of cellar fill in feature 2. These are catalogued as H66.271.678, .751, .806, .827, .828, and .829.

Some description of the original objects is still possible for the following:

H66.271.751 was a ring with a round opaque dark colored stone mounted in a collet. The stone appears to be about 0.5 cm. in diameter. No measurements of the band are possible, as the specimen is coated with sand grains and was also broken in screening.

H66.271.678 appears to be part of a small but deep circular collar with parallel grooved lines running around it.

H66.271.827 is a rolled tinkling cone currently 2.4 cm. long.

H66.271.829 is a strip of wire 0.1 cm. thick(?) rolled into two or three flat coils.

Copper Wire

H66.271.793 is a short length of copper wire of about 0.2 cm. diameter (Plate 16f). It has corroded considerably. Provenience is lower fill of feature 2.

Ornamental Iron Band

H66.271.834 includes several fragments of a badly rusted band about 0.3 cm. thick, 1.1 cm. wide, and 7.6 cm. projected diameter (example Plate 16q). The band is perforated with long narrow rectangles. There is an interior flange along one edge which is perforated at intervals. Two rivets are retained within these perforations. The only function presently suggested for this specimen is that it served as an

ornamental band around some part of a lamp. It was located in the lower fill of feature 2.

Perforated Iron Strap

Three short rectangular pieces (H66.271.310, .833, .21F) each have a single perforation. One, H66.271.21F, has a rusted rivet or nail in the perforation. All are associated with feature 2.

H66.271.487 is a broken piece of strap 0.075 cm. thick and 3.2 cm. wide with four round punched perforations (Plate 16y). Provenience is feature 2.

H66.271.924 is a broken length of strap 0.185 cm. thick and 2.6 cm. wide with a single punched perforation (Plate 16w). Provenience is the plow zone in the exploratory trench at 135 feet west.

Metal Stock

Eight small pieces of metal, probably all iron, are grouped as stock (example Plate 16x). They range from small lengths of tapered and untapered bar to a thin, short piece of wire. Six of the specimens are from feature 2, one is from feature 1, and one is from the exploratory trench at 135 feet west. Catalogue numbers: H66.271.27, .116, .692, .730, .735, .894, .915, .953.

Heavily Corroded Iron Scrap

There are fifteen such fragments (examples Plate 16m, s). Even if they were not so rusted, it is doubtful that they could be identified as anything other than small pieces of scrap. Nine of the pieces came from feature 2, one each from the surface and the south exploratory trench, and three from the west exploratory trench.

Catalogue numbers: H66.271.113, .119, .226, .263, .290, .501, .534, .768, .769, .925, .926, .1036A and B, .1037, .1083.

Tin

H66.271.611 is part of a circular tin lid, probably from a tobacco box (Plate 16v). The diameter of the lid is 6.35 cm., and the thickness of the metal is 0.07 cm. Provenience is feature 2.

H66.271.405 and .346 are pieces of sheet tin 0.05 and 0.06 cm. thick respectively (Plate 16u, t). Both were found in the fill of feature 2.

H66.271.1024 is a small trapezoid shaped piece of tin, possibly cut out for a bangle. It is made of sheeting 0.06 cm. thick. Provenience is backfill.

Yellow Ochre

Six small pieces of soft, powdery yellow substance are tentatively identified as ochre. Five of the pieces (H66.271.151, .156) were found near the center of the fill in feature 2. The sixth, H66.271.643, was found near the western palisade.

APPENDIX III

FAUNAL REMAINS FROM FORT WHITE EARTH

All bones from undisturbed deposits were collected but sample collections only were made from the disturbed strata in the cultivated portions of the site. The mammal bone collected weighed over 120 pounds and included remains from at least twelve species. As with the Buckingham House sample bird and fish bone have been separated out but not identified as to specie because of unavailability of adequate comparative collections. Mollusc remains were quite common and highly visible on the surface of the site. Perhaps it was this circumstance that prompted a local farmer to seriously ask the excavators of the site whether they had found the pearls yet.

The following three tables present the data in three different ways. The first plots the distribution of all faunal remains according to the features of areas they were associated with. The fish remains are separated into two categories, bones and scales. The latter group was present in large quantities in some areas and presence or absence only is indicated. Table 2 gives the distribution of the mammal bone according to specie on the basis of the weight of identified bones for each one. Weights were used as it was felt that they would reflect the importance of the species as food sources more accurately than by using numbers. In the final table those mammal species regarded as important food sources were counted using identified long bones as the main criteria for arriving at minimum numbers represented. These counts were used in conjunction with estimates of usable meat quantities from White (1953) to arrive at an independent estimate of the relative importance

of different species. It is important to emphasize that the small collection being analyzed is not large enough to allow conclusions to be taken very far.

TABLE 1

DISTRIBUTION OF FAUNAL REMAINS BY FEATURE AT FORT WHITE EARTH

Feature Species	1	2	26	31	32	33	34	35	36	37	44	45	HBC Surf.	HBC Total	29	38	40	NWC Surf.	NWC Total	*	Grand Total
Moose	6	11	22			3	4	24	9	19	1	1	12	112		3	12	7	22		134
Bison		4	9				1	2	5	8	2	2	10	43	4	3	12	7	26		69
Elk	3	2	8		1	1	7	7		7	1		14	51		4	9	9	22		73
Horse														--				2	2		2
Deer			2										1	3							3
Canis sp.					1		1						4	6			27		27		33
Beaver		2				1	1				1	1	2	8							8
Fox														--				1	1		1
Lynx			2											2					--		2
Rabbit												2	1	3					--		3
Moose	5	60												65					--		65
Grd. Squirrel	1											1	1	3					--		3
Unidentified	133	272	112		110	97	355	311	59	109	235	81	14	1887	81	96	78	18	273		2160
Bird	1	72	3	1		12	50	11			15	2	3	170		2	3		5		175
Fish (bone)	1	4					7				15			27		1			1		28
Fish scales	✓	✓	✓				✓				✓	✓									
Mollusc	1	1					1	4					11	18	1			12	13	11	73

(* unassociated)

TABLE 2
DISTRIBUTION OF MAMMAL BONE BY WEIGHT

	Hudson's Bay Co.		North West Co.		Total	
	Weight of Bone (oz.)	% of Total	Weight of Bone (oz.)	% of Total	Weight	%
Moose (Alces americana)	484	36.0	147 $\frac{1}{4}$	30.3	631 $\frac{1}{4}$	34.5
Bison (Bison sp.)	221	16.5	153 $\frac{3}{4}$	31.6	374 $\frac{3}{4}$	20.5
Elk (Cervus canadensis)	129 $\frac{3}{4}$	9.8	66	13.6	195 $\frac{3}{4}$	10.7
Horse (Equus)	---	---	30	6.2	30	1.6
Canis sp.	$\frac{1}{2}$	* ($< 0.1\%$)	1 $\frac{1}{4}$	0.2	1 $\frac{3}{4}$	0.1
Beaver (Castor canadensis)	2 $\frac{1}{4}$	0.2	---	---	2 $\frac{1}{4}$	0.1
Deer (Odocoileus sp.)	$\frac{1}{2}$	*	---	---	$\frac{1}{2}$	*
Lynx sp.	$\frac{1}{2}$	*	---	---	$\frac{1}{2}$	*
Fox (Vulpes sp.)	---	---	*	*	*	*
Rabbit (Lepus sp.)	* ($< \frac{1}{4}$ oz.)	*	---	---	*	*
Ground Squirrel (Citellus sp.)	*	*	---	---	*	*
Mouse (Microtus sp.)	*	*	---	---	*	*
Unidentified	505	37.6	88	18.17	593	32.5
TOTALS	1343 $\frac{1}{2}$	100.0	486 $\frac{1}{4}$	100.0	1829 $\frac{3}{4}$	100.0

TABLE 3

MINIMUM NUMBER OF MAMMAL SPECIES AND ESTIMATED QUANTITIES OF USABLE MEAT

Species	Minimum number of individuals. A. HBCo. B. NWCo.	Hudson's Bay Company		North West Company		Total	
		Estimated weight of usable meat	%	Estimated weight of usable meat	%	Estimated weight	Percentage
Moose	A. 7 (left humerus)	3,500 lbs.	39.0	2,000 lbs.	38.8	5,500 lbs.	39.0%
	B. 4 (left femur)						
Bison	A. 6 (left femur)	3,900	43.4	1,950	37.9	5,850	41.4
	B. 3 (right tibia)						
Elk	A. 4 (left radius-ulna)	1,400	15.6	700	13.6	2,100	14.9
	B. 2 (left scapula)						
Horse	B. 1	---	---	500	9.7	500	3.5
Deer	A. 1	125	1.4	---	---	125	0.9
Beaver	A. 2 (age)	52	0.6	---	---	52	0.4
Rabbit	A. 2 (mandible)	6	*	---	---	6	*
TOTAL		8,981 lbs.	100.0	5,150	100.0	14,131 lbs.	100.0%

(Estimates for usable quantities of meat for bison, elk, (Virginia) deer, and beaver based on White, 1953. Estimates for usable quantities of meat for moose, horse and rabbit calculated by J. S. Nicks and taxidermists at Provincial Museum and Archives of Alberta.)

FAUNAL AND VEGETAL REMAINS FROM BUCKINGHAM HOUSE

The sample is regarded as too small for any meaningful conclusions regarding the relative importance of different species in the diet of the fort's occupants. The distribution of remains as shown in the following table does suggest however that the species with the widest distribution across the site, Bison and beaver, were important.

[illegible]

APPENDIX V

FORT WHITE EARTH FEATURES

Feature Number	Type	Shape	N-S Dimension	E-W Dimension	Depth or Height	Remarks
1	Depression	Circular	--	--	--	Excavated.
2	Depression	Circular	11'	10'	2.5'	Partially excavated.
3	Mound	Circular	15'	15'	2.5'	With stones.
4	Mound	Circular	12'	12'	2.5'	Excavated chimney.
5	Depression	Circular	8.5'	8'	1.5'	
6	Mound	Oblong	11.5'	10'	1.5'	With stones.
7	Depression	Circular	15'	15'	2.5'	
8	Depression	Oblong	15'	13'	4'	Disturbed in SE corner.
9	Depression	Oblong	20'	18'	--	Disturbed, east half is vegetation pattern.
10	Mound	---	9'	--	1'	Disturbed, bulldozed out on east side.
11	Vegetation pattern	Circular	5'	5'	--	
12	Vegetation pattern	Circular	15'	15'	--	
13	Mound	Circular	15'	15'	3'	With stones.
14	Depression	Oblong	13.5'	15.5'	2'	
15	Mound	Oblong	15'	10.5'	2.5'	With stones.
16	Depression	Oblong	8'	9.5'	1.5'	
17	Depression	Oblong	8.5'	10'	1'	
18	Mound	Circular	10'	10.5'	2'	With stones.
19	Mound	Oblong	15'	13'	2'	With stones. Disturbed by burrowing.
20	Depression	Oblong	6'	4'	0.5'	
21	Depression	Circular	5'	5'	0.5'	
22	Depression	Circular	5.5'	6'	1'	
23	Mound	Oblong	9'	10'	2'	Excavated chimney.
24	Depression	Oblong	13'	14'	2'	
25	Mound	Oblong	13'	11.5'	2.5'	East side disturbed.
26	Depression	Oblong	5'	15'	1.5'	Partially excavated.
27	Structural					North stockade.
28	Structural					West stockade.
29	Structural					SW bastion.
30	Structural					South stockade.
31	Structural					East stockade.
32	Structural					NE bastion(?).
33	Structural					Building.
34	Structural					Building.

Feature Number	Type	Shape	N-S Dimension	E-W Dimension	Depth or Height	Remarks
35	Structural					Building.
36	Depression	Linear	1.5'	25'	0.5'	Corresponds with feature 30.
37	Structural					North gate HBCo.
38	Structural					South gate NWCo.
39	Depression	Linear	56'	3'	0.5'	Corresponds with feature 31.
40	Structural					Building.
41	Structural					Median wall.
42	Structural					Gate at north end of median wall.
43	Structural					Interior trench (for drainage?).
44	Structural					North gate NWCo.
45	Structural					Ash pits.
46	Depression	Circular	5.5'	5.5'	1'	
47	Depression	Circular	3.5'	4.0'	0.3'	
48	Depression	Circular	2.0'	2.0'	0.3'	
49	Depression	Circular	5.5'	5.5'	0.35'	
50	Ridge	Linear	--	44'	--	Probable wall ridge.
51	Ridge	Linear	33'	--	--	Probable wall ridge.
52	Ridge	Linear	--	--	--	Probable north wall of feature 35.
53	Ridge	Linear	40'	--	--	Probable wall ridge.
54	Ridge	Linear	19'	2.5'	0.5'	Probable wall ridge.
55	Ridge	Linear	31'	--	--	Probable wall ridge.
56	Ridge	Linear	--	36'	--	Probable wall ridge.
57	Ridge	Linear	35'	--	--	Probable west wall of feature 33.
58	Structural					Stone pile.
59	Structural					Plank "sidewalk".
60	Structural					Post in trench.
61	Structural					NW corner of stockade.
62	Depression	Lensate	3'	7'	1'	Disturbed by cultivation.
63	Depression	Circular	11.5'	11.5'	1.5'	
64	Mound	Crescent	24'	6'	0.5'	With stones, badly disturbed.
65	Depression	Oblong	7'	12'	2'	Disturbed by cultivation.
66	Mound	Oblong	10'	6'	0.5'	With stones. Badly disturbed.
67	Mound	Oblong	20'	10'	1'	No stones. Boundaries indefinite.
68A	Depression	Oblate	8.5'	10'	2'	Two adjacent depressions
68B	Depression	Oblate	6'	8.5'	2'	only partially separated.
69	Mound	Oblate	9.5'	11'	1.5'	With stones. Badly disturbed.

Feature Number	Type	Shape	N-S Dimension	E-W Dimension	Depth or Height	Remarks
70	Depression	Circular	5'	5'	0.5'	
71	Depression	Oblate	7'	8'	1'	
72	Depression	Oblate	5'	6'	1'	
73	Mound	Circular	9'	9'	2'	With stones.
74	Depression	Oblong	6'	8.5'	2'	
75	Mound		20'	10'	1'	No stones. Boundaries indefinite.
76	Depression	Oblong	9.5'	10.5'	1.5'	Disturbed by cultivation on north side.
77	Mound	Oblong	12'	11'	1.5'	
78	Depression	Oblong	4.5'	6'	0.5'	Disturbed by cultivation from north.
79	Mound	Oblong	10'	12'	1.5'	Stone. Connects with feature 80.
80	Mound	Oblong	9'	17'	1'	See under 79.
81	Depression	Oblong	9'	12'	1.5'	
82	Mound	Linear	4.5'	50'	0.5'	Probable wall ridge.
83	Depression	Rectangle with round corners	24'	35'	5.5'	
84	Depression	Oblong	8'	6'	1.5'	
85	Mound	Oblong	15'	20'	3'	With stones.
86	Mound	Oblong	15'	13.5'	2.5'	With stones.
87	Depression	Circular	22'	22'	5'	
88	Mound	--	--	--	--	No stones, may be plow ridge.
89	Mound	Oblong	10'	12'	2'	With stones.
90	Depression	Circular	16'	15.5'	3'	
91	Structural					Post in trench.
92	Structural					Building.
93	Structural					Picket line.
94	Structural					"Firepit".

APPENDIX VI

LISTS OF TRADE GOODS FROM 1791 AND 1810

York Factory Indent--1791 (HBC Archives, A11/117)

Baize, blue	40 yards
Baize, red	40 yards
Baize, white	160 yards
Baize, green	40 yards
Bayonets, large	300
Bayonets, small	300
Beads, #2	10 pounds
Beads, #3	10 pounds
Beads, #4	10 pounds
Beads, #5	10 pounds
Beads, #6	10 pounds
Beads, #162	30 pounds
Beads, #168	60 pounds
Beads, #179	20 pounds
Beads, #186	20 pounds
Beads, #193	20 pounds
Beads, #202	100 pounds
Beads, #204	20 pounds
Beads, #230	100 pounds
Beads, #207	20 pounds
Beads, #209	20 pounds
Beads, #245	10 pounds
Beads, #259	20 pounds
Beads, #271	10 pounds
Beads, #275	10 pounds
Beads, #277	10 pounds
Bells, Hawk, large	200
Bells, Hawk, common	300
Blankets, red, 3 pt.	150
Blankets, red, 2½ pt.	100
Blankets, red, 2 pt.	100
Blankets, red, 1½ pt.	150
Blankets, red, 1 pt.	150
Blankets, green striped	45
Blankets, red striped	360
Blankets, red and green striped	270
Boxes, wood barrel	60
Boxes, egg	60
Boxes, tobacco, japan	24
Boxes, tobacco, japan with burning glasses	60
Boxes, tobacco, iron octagon	30
Buttons, hollow, coat	25 gross
Buttons, hollow, waistcoat	25 gross
Brandy, English	4000 gallons
Chisels, Ice, broad	160

Chisels, Ice, narrow	160
Cloth, blue	900 yards
Cloth, blue, corded	2000 yards
Cloth, blue, fine	260 yards
Cloth, green	100 yards
Cloth, green, fine	50 yards
Cloth, red, corded	2000 yards
Cloth, red, fine	200 yards
Cloth, white	100 yards
Combs, horn, large	144
Combs, horn, small	144
Combs, horn, dressing	144
Combs, ivory	36 dozen
Cottons, printed and fancy striped	300 yards
Duffel, white	100 yards
Ear drops	150 pairs
Feathers, coloured blue and red	150
Feathers, cock and hen to go around leader's hats	100
Files, large flat	600
Flannel	260 yards
Flints	10000
Gartering of sorts in lively colours	100 gross
Glasses, looking, book	60
Glasses, looking, gilt paper	60
Glasses, looking, octagon	60
Gunpowder, fine	3000 pounds
Guns of 4 feet	50
Guns of 3½ feet	100
Guns of 3 feet	100
Hatchets, large round eye	560
Hatchets, middling round eye	300
Hatchets, small round eye	150
Hatchets, small oval eye	560
Handkerchiefs, silk	150
Hats, common	60
Hats, fine	150
Horns, powder, 1 pound	50
Horns, powder, 3/4 pound	80
Horns, powder, ½ pound	50
Kettles, 6 gal.	10
Kettles, 5 gal.	6
Kettles, 4½ gal.	6
Kettles, 1½ gal.	20
Kettles, 1 gal.	30
Kettles, 7 pints	20
Kettles, 6 pints	10
Kettles, 5 pints	20
Kettles, 3 pints	10
Kettles, 2 pints	30
Kettles, 1 pint	50
Kettles, ½ pint	100
Knives, handle butcher	100 dozen

Knives, clasp	100 dozen
Knives, large roach	50 dozen
Knives, Yew handle	100 dozen
Lace, orris broad white	300 yards
Lace, orris narrow white	200 yards
Lace, orris broad yellow	300 yards
Lace, orris narrow yellow	200 yards
Mocotansons "as per last years pattern"	30 dozen
Pots, japanned 1 quart	30
Pots, japanned 1 pint	100
Pots, japanned $\frac{1}{2}$ pint	100
Rings, plain	36 dozen
Rings, seal	50 dozen
Rings, stoned	50 dozen
Runlets, 8 quarts	300
Runlets, 6 quarts	200
Runlets, 4 quarts	200
Runlets, 3 quarts	200
Runlets, 2 quarts	300
Sashes, worsted	160
Shirts, checked	24
Shirts, strapped	36
Shirts, cotton	600
Shirts, white	24
Shirts, white strapped	24
Shoes, flat soled	36 pairs
Shoes, Turned up soles	36 pairs
Shoes, pumps	36 pairs
Shot, Bristol	60 kegs
Shot, duck	20 kegs
Shot, low India	60 kegs
Stockings, worsted	60 pair
Stockings, yarn, blue	60 pair
Stockings, yarn, green	36 pair
Stockings, yarn, red	60 pair
Thread, blue	20 pounds
Thread, green	15 pounds
Thread, red	15 pounds
Thread, white	12 pounds
Thread, yellow	5 pounds
Tobacco, Brazil	10000 pounds
Tobacco, cut	500 pounds
Tobacco, roll	1500 pounds
Trunks, large	24
Trunks, middling	36
Trunks, small	24
Twine, #1	300 skeins
Twine, #2	30 skeins
Twine, #6	30 skeins
Twine, #10	60 skeins
Vermilion	36 pounds
Waters, red	40 gal.
Waters, white	60 gal.

Edmonton Account Book 1810-1811. "Saskatchewan Factory" (Reel IM467,
B/60/d/2a)

Awl blades
Baize, blue Molten
Baize, white
Basons, pewter
Bayonets
Beads, common assorted
Bells, Hawk
Bells, Horse
Blankets, large
Blankets, 3 points
Blankets, 2½ points
Blankets, 2 points
Blankets, 1½ points
Boxes, tobacco Jappaned
Boxes, tobacco with burning glasses
Braclets, plated
Brandy, high
Breeches, blue
Buttons, pewter, coat
Buttons, pewter, waiste
Buttons, sleeve
Calico
Chissels, Ice of sorts
Cloth, blue, plain
Cloth, blue, corded
Cloth, green, plain
Cloth, green, corded
Cloth, red, plain
Cloth, red, corded
Cloth, white
Coats, great
Combs, horn
Combs, ivory
Drawers, grey
Duffels
Files, trading
Feathers, black
Feathers, Ostrich
Flannel
Gartering, common
Gartering, rich silk lace
Glasses, looking book
Glasses, looking oval (gilt)
Guns of 4 feet
Guns of 3½ feet
Guns of 3 feet
Handkerchiefs, linen
Handkerchiefs, Bendanoes, black
Handkerchiefs, Coloured, smalle
Handkerchiefs, Soosee

Hatchets, 1st sort
Hatchets, 2nd sort
Hats, commons, men
Horns, powder $\frac{1}{2}$ lb.
Horns, powder $\frac{3}{4}$ lb.
Jackets, blue serge lined
Kettles, open, copper
Kettles, tin, large
Kettles, tin, of 1 gallon
Knives, clasp
Knives, roach
Knives, split handled yew
Flints
Frocks, duck
Lace, orris
Needles of sorts
Pipes, tobacco, short
Pans, tin, midling
Pistols
Pots, Jack Japann'd of 1 Pt.
Pots, Jack Japann'd of 2 Pt.
Pots, Jack Japann'd of $\frac{1}{2}$ Pt.
Pots, Jack Japann'd of $\frac{1}{4}$ Pt.
Pots, tin, of 2 quarts
Pots, tin, of 1 quart
Pots, tin, of 1 pint
Powder, gun
Runlets of 2 galls.
Runlets of 1 gall.
Sashes
Scissors
Serge, emboss'd
Shirts, Calico, adult
Shirts, Calico, youth
Shirts, Cotton, striped, Mens
Shirts, flannel
Shirts, Linen, Irish
Shirts, Linen, ruffled
Shoes, adult
Shot, Bristol & Duck
Shot, Bull
Silk, riband
Soap, white
Spoons
Steels
Stockings, worsted
Stockings, yarn
Thimble, brass, small
Thread, colored
Tobacco, Brazil
Tobacco, Spencers large and small
Traps, steel
Trowsers, duck

Tumblers, Jappan'd of 1 pint
Twine, fine
Twine, Sturgeon
Vermillion
Villery
Waistcoats, flannel
Worms, gun

Edmonton Account Book 1810-1811. List of Stores

Aqua fortes
Axes, broad
Bayonets, musket
Bees wax
Brace and caps, complete
Buttons, officers coat
Buttons, Do. waistcoat
Canvas
Chissels
Compasses, (carpenter)
Cotton wick
Duck, raven
Files of 14 inches
Files of 12 inches
Files of 10 inches
Files of 9 inches
Files of 8 inches
Files of 6 inches
Files cross cut
Files handsaw
Files pit, Do.
Flags, Indian
Forks, Table
Gimblets
Glue
Gouges
Hammers, claw
Hooks, fishing
Iron Bar, flat
Lamp black
Lead, sheet
Lines, Beaver 6 at $7\frac{1}{2}$ (?) ea.
Lines, Net
Lines, Tracking, Boat
Medicines
Nails of sorts
Nails, Tacks
Oil paint prepared
Paint, red Venetian
Paint, white
Pans, frying
Plane, Irons

Plane, Jack single
Plane, Smoothing
Pipes, gun
Pitch
Plates, heel, gun
rule of 2 feet
rule Do. with brass slide
Sandpaper (sheets)
Saw, hand
Saw, tenon
seeds, garden
Sponges
Stationary Books Acct. demy bound
 Books Acct. Covered 3/4(?)
 Paper cartridge
 Paper, Demy fine fol
 Paper, Post short
 Paper, Post(?)
 Pencils, black lead
 Powder, black ink--paper
 Tape (pieces)
 Wax, sealing (sticks)
Steel, bar
Straps, carrying
Tar
Thread, silk
Tin, sheets
Varnish
Wire, penning

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
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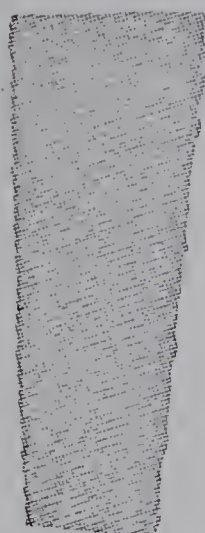
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Plate 1. FORT WHITE EARTH, TOOLS AND HARDWARE.

- a. File fragment (H68.1.50). HBCo., feature 2.
- b. File tang (H68.1.296). HBCo., feature 40.
- c. Brass instrument fragment (H68.1.545). Median wall, feature 41.
- d. File tang marked "MV & Co.  " (H68.1.452). HBCo., surface.
- e. File tang marked "...KE..." (H68.1.457). HBCo., surface.
- f. "Screwdriver" (H68.1.901). HBCo., surface.
- g. Copper pull ring (H66.327.284). NWCo.
- h. Staple (H68.1.384). HBCo., feature 40.
- i. Hinge fragment (H68.1.871). HBCo., feature 35.
- j. Brass lug (H68.1.454). HBCo., surface.
- k. Brass lug (H68.1.455). HBCo., surface.
- l. Awl with wooden handle (H68.1.85). HBCo., feature 2.
- m. Possible bone awl (H68.1.883). HBCo., feature 2.
- n. "Ferrule" (H66.327.243). NWCo., surface.
- o. Brass fastening (H68.1.841). HBCo., feature 26.



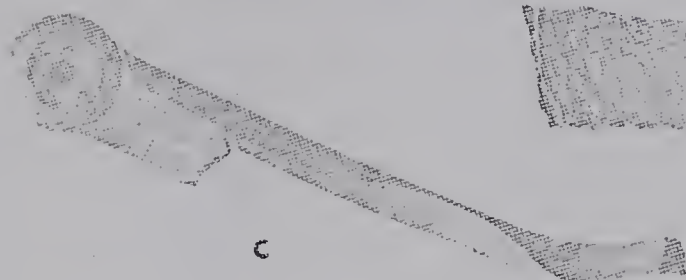
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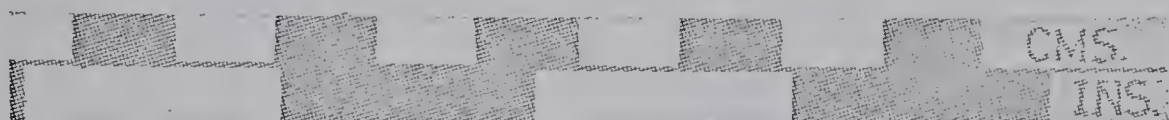
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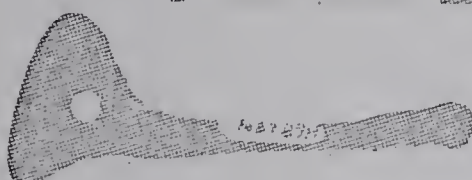


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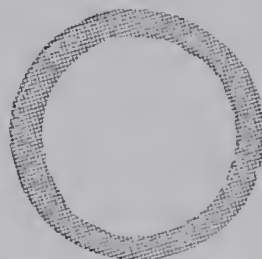
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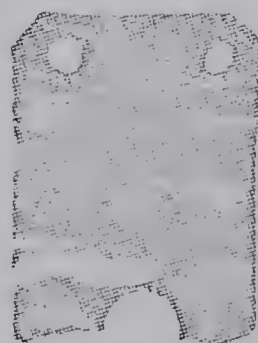
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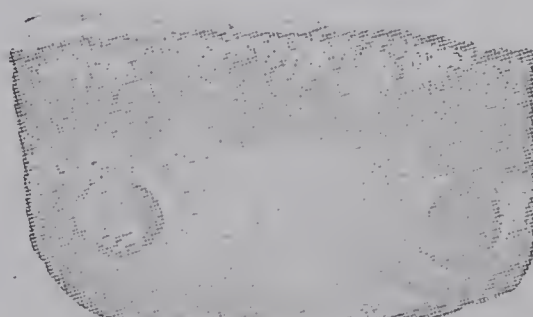
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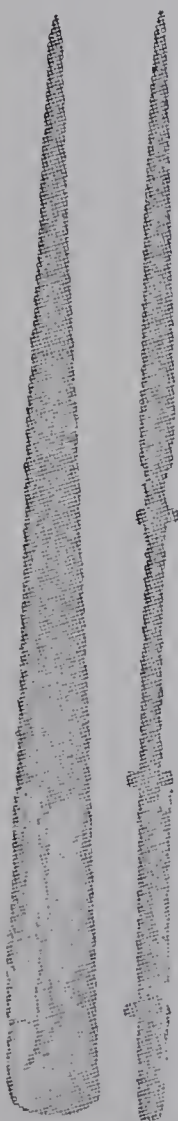
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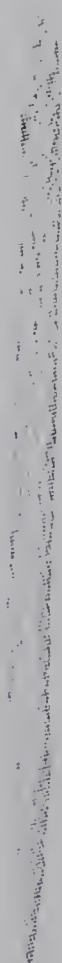
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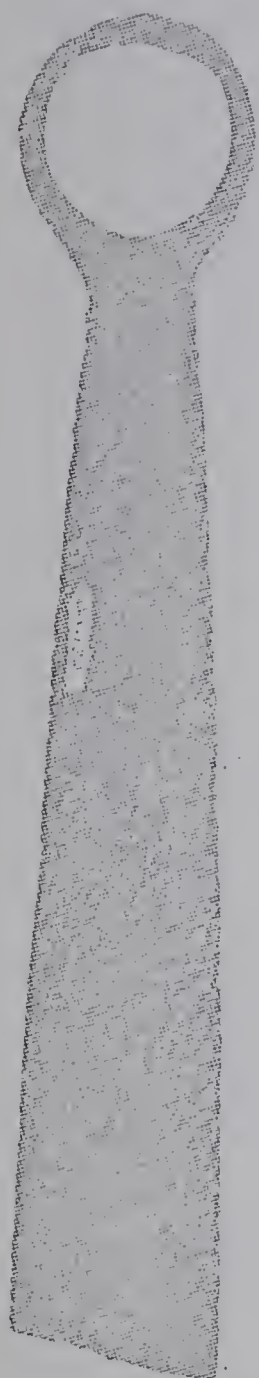


CMS.

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Plate 2. FORT WHITE EARTH, TOOLS, HARDWARE, HUNTING & DEFENCE.

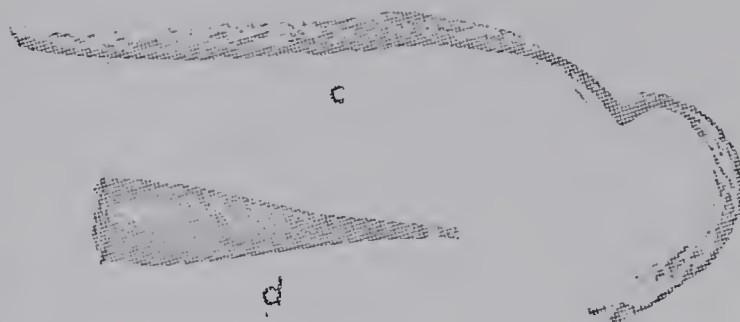
- a. Trap spring (H65.321.38). NWCo., surface.
- b. Gun barrel (H65.321.39). HBCo., surface.
- c. Possible trigger guard (H68.1.322). HBCo., feature 40.
- d. Bottom ramrod thimble (H66.327.67). HBCo., feature 34.
- e. Iron trade point (H68.1.131). HBCo., feature 32.
- f. Chalcedony projectile point (H68.1.260). North of HBCo.
- g. Copper trade point (H66.327.119). HBCo., feature 34.
- h. Gunflint (H66.327.275). NWCo., surface.
- i. Gunflint (H68.1.172). HBCo., feature 35.
- j. Gunflint (H68.1.893). HBCo., feature 2.
- k. Gunflint (H68.1.469B). Surface.
- l. Gunspall (H68.1.607). HBCo., feature 1.
- m. Gunflint (H68.1.469C). Surface.
- n. Flint, possibly for use with fire steels (H66.327.249). NWCo., surface.
- o. Flint, possibly for use with fire steels, originally gunflint (H68.1.15). HBCo., feature 33.
- p. Iron strap (H68.1.874). HBCo., feature 2.
- q. Whetstone (H68.1.312). HBCo., feature 2.
- r. Hinge (H68.1.438). HBCo., surface.
- s. Rivets and roves (H68.1.456A,B, .556D, .745). North of HBCo.



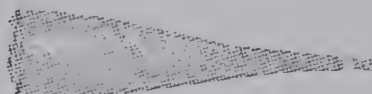
a



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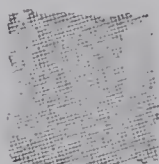
e(x1/2)



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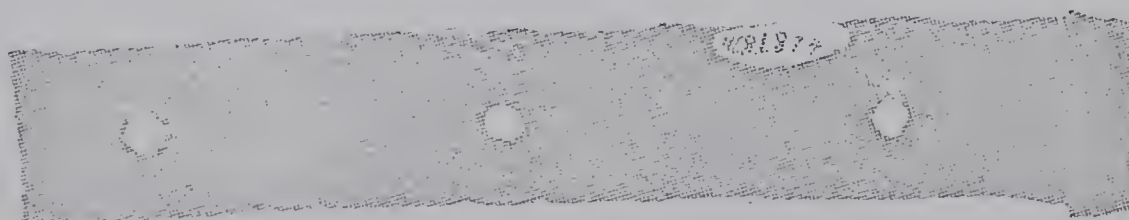
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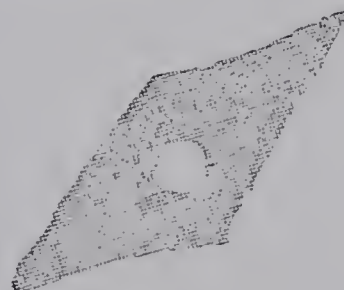
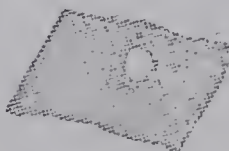
o



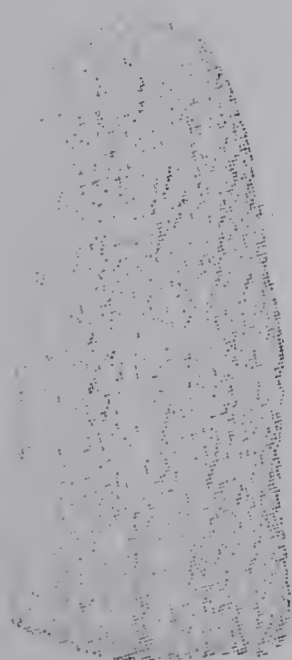
p



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s



q



Plate 3. FORT WHITE EARTH, SPIKES & NAILS.

- a. Rose head, sharp point (H68.1.316). HBCo., feature 33.
- b. Rose head, spear or flat point (H68.1.61A). HBCo., feature 33.
- c. Upset head, probably sharp point (H68.1.752D). HBCo., feature 44.
- d. Rose head, blunt point (h68.1.114). HBCo., feature 35.
- e. Small thick rose head, point missing (H68.1.755). HBCo., feature 34.
- f. Rose head, sharp point (H66.327.192). HBCo., feature 34.
- g. Rose head, blunt point (H66.327.129). HBCo., feature 34.
- h. Rose head, spear or flat point (H68.1.344). HBCo., feature 35.



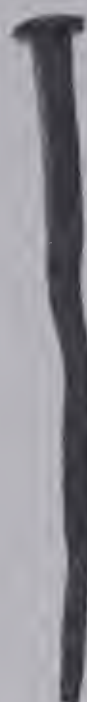
a



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Plate 4. FORT WHITE EARTH, NAILS.

- a. Upset head, flat (or spear or chisel) point (H68.1.176). NWCo., feature 29.
- b. Upset head, sharp point (H68.1.817). HBCo., feature 35.
- c. T head, flat point parallel to long axis of head (H68.1.130A). HBCo., feature 32.
- d. T head, blunt point (H68.1.76A). HBCo., surface.
- e. Demonstration brad (H68.1.746A). HBCo., feature 45.
- f. Demonstration brad (H68.1.746B). HBCo., feature 45.
- g. L head, blunt point (H68.1.846). HBCo., feature 35.
- h. T head, shoulder in line with long axis of head, sharp point (H68.1.194A). NWCo., feature 38.
- i. T head, shoulder in line with short axis of head, point missing (H68.1.752A). HBCo., feature 40.
- j. L head, shoulder in line with short axis of head, blunt point (H68.1.408A). NWCo., surface.
- k. T head (altered from rose head), point missing (H68.1.622B). HBCo., feature 34.
- l. Broad rose head, sharp point (H66.327.27). HBCo., feature 2.
- m. Broad rose head, spear or flat point (H68.1.229). NWCo., feature 38.
- n. Offset head, sharp point (H68.1.546A). HBCo., feature 35.
- o. Horse shoe nail (H68.1.53A). HBCo., feature 34.
- p. Clasp nail, sharp point (H68.1.151). HBCo., feature 35.
- q. Clasp nail, sharp point (H66.327.28). HBCo., feature 34.



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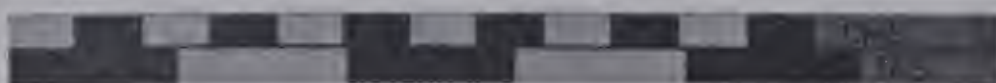
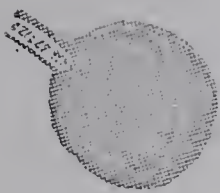


Plate 5. FORT WHITE EARTH, BUSINESS, CLOTHING & ORNAMENT, TOOLS.

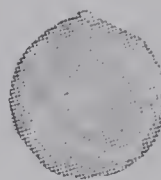
- a. Bale seal, front and back (H66.327.120). HBCo., surface.
- b. Bale seal fragment (H66.327.87). HBCo., feature 34.
- c. Bale seal fragment (H68.1.258). NWCo., surface.
- d. Interior of back plate of small brass lock (H66.327.271). NWCo., surface.
- e. Slate pencil tips (H68.1.52, .888). HBCo., features 2, 34.
- f. Brass eye (H68.1.659). HBCo., feature 34.
- g. Brass chain (H68.1.863). HBCo., feature 2.
- h. Brass tinkle cone (H66.327.137). HBCo., feature 34.
- i. Brass cufflink (H68.1.742A,B). HBCo., feature 45.
- j. Pewter "HBC" coat button, front and back (H68.1.159). HBCo., feature 35.
- k. Pewter "HBC" waistcoat button, front and back (H68.1.99). HBCo., feature 1.
- l. Enlargement of k. to show detail of crest.
- m. Whitemetal button, front and back (H66.327.21). HBCo., feature 34.
- n. Convex whitemetal button, front and back (H68.1.310). HBCo., feature 2.
- o. Undecorated gilded button, front and back (H66.327.7). HBCo., feature 34.
- p. Shell button with brass eye (H66.327.85). HBCo., feature 34.
- q. Perforated bone disc, probably a button blank (H68.1.416). HBCo., feature 2.
- r. Back of brass button marked "PLATED" (H68.1.598). HBCo., feature 40.
- s. Brass straight pins (L-R: H68.1.560, .352, .421, .674). HBCo., features 2, 34, 35.
- t. Fleshing tool of bone (H68.1.785). HBCo., feature 2.
- u. Polished bone, possibly the end tooth of a comb (H68.1.293). HBCo., feature 45.
- v. Plain brass button (H68.1.319). HBCo., feature 40.



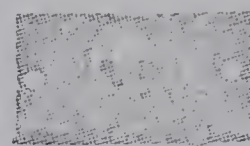
a



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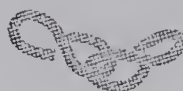
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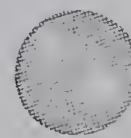
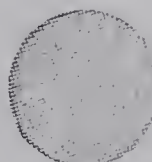
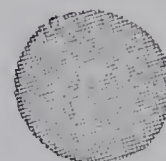
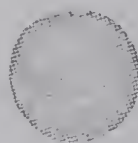
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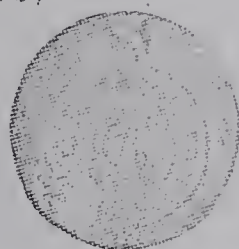
j (x2/3)

k

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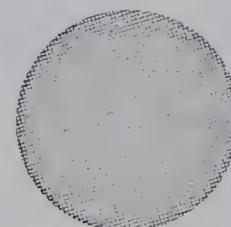
l (x1 1/2)



p



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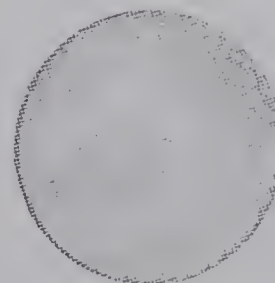
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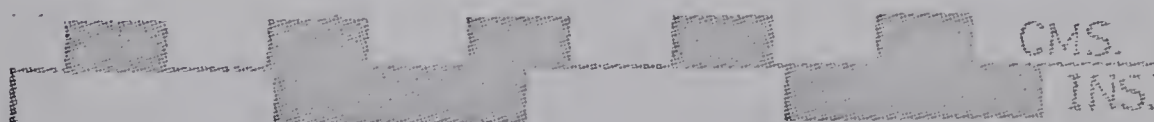


Plate 6. FORT WHITE EARTH, CERAMICS.

- a. Interior and exterior of Chinese porcelain rim sherd (H68.1.403). NWCo., surface.
- b. Interior and exterior of Chinese porcelain sherd (H68.1.402B). NWCo.
- c. Interior and exterior of Chinese porcelain sherd (H66.327.266). NWCo.
- d. Interior and exterior of Chinese porcelain rim sherd (H65.321.7). NWCo.
- e. Base of Chinese porcelain bowl (H68.1.4A). NWCo., surface.
- f. Body sherd of Chinese porcelain (H65.321.5). NWCo., surface.
- g. Exterior of rim sherd of Chinese porcelain (H68.1.942). NWCo., surface.
- h. "Lug" of transfer printed blue underglaze earthenware (H68.1.26A). HBCo., feature 34.
- i. Interior of bottom of plate or large bowl of transfer printed blue underglaze earthenware (H66.327.263, .264, .265). NWCo., surface.
- j. Exterior of i., less H66.327.265.
- k. Interior and exterior of transfer printed blue underglaze earthenware rim sherd (H68.1.431). NWCo., feature 29.
- l. Interior of transfer printed blue underglaze earthenware rim sherd (H65.321.6). Surface.
- m. Sherd of transfer printed blue underglaze earthenware (H68.1.497). Surface.
- n. Sherd of transfer printed blue underglaze earthenware (H68.1.491). Surface.
- o. Sherd of transfer printed blue underglaze earthenware, with gilt rim (H68.1.253). NWCo., feature 44.
- p. Interior and exterior of transfer printed blue underglaze earthenware rim sherd (H68.1.534). HBCo., feature 2.
- q. Sherd of transfer printed blue underglaze earthenware (H66.190.55). NWCo., surface.
- r. Sherd of transfer printed blue underglaze earthenware (H65.321.8). Surface.
- s. Sherd of transfer printed blue underglaze earthenware (H68.1.41). HBCo., feature 34.
- t. Sherd of transfer printed blue underglaze earthenware (H66.327.113). HBCo., feature 34.
- u. Sherd of transfer printed blue underglaze earthenware (H68.1.404). NWCo., surface.
- v. Sherd of transfer printed blue underglaze earthenware (H68.1.4E). Surface.
- w. Undecorated sherds of cream coloured earthenware (H68.1.496, .809, .878). Surface, HBCo., features 1, 35.
- x. Earthenware rim sherd with yellow and brown border design (H68.1.261). NWCo., surface.
- y. "Foot" of earthenware vessel (H66.327.285). NWCo., surface.
- z. Interior and exterior of earthenware rim sherd with yellow, blue and brown border design, and blue, brown and green flower (H68.1.402A). NWCo., surface.



a



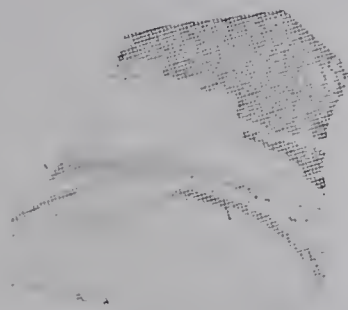
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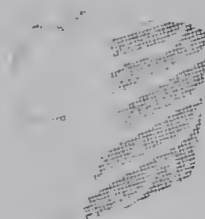
c



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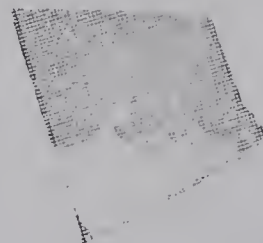
h



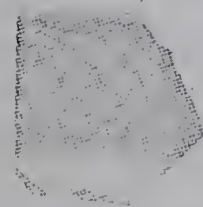
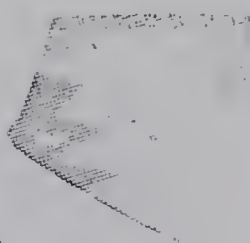
i



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x



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z



a



b



c



CMS

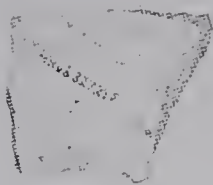
INS

Plate 7. FORT WHITE EARTH, HOUSEHOLD.

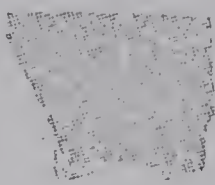
- a. Sherd of stoneware with folded rim (H66.190.72). HBCo., surface.
- b. Interior and exterior of heavy stoneware sherd (H66.327.248). NWCo., surface.
- c. Stepped interior and plane exterior of heavy stoneware sherd (H68.1.575). HBCo., surface.
- d. Exterior of sherd from base of heavy stoneware vessel (H68.1.4C). Surface.
- e. Neck from green glass bottle (H68.1.702). HBCo., feature 34.
- f. Carved bone handle fragment (H66.327.272). NWCo., surface.
- g. Side and superior views of neck of green glass bottle (H68.1.857). HBCo., feature 35.
- h. Interior of base of square green glass bottle with slight kick (H68.1.538A,B). HBCo., feature 35.
- i. Interior of fragments from base of round green glass bottle with strong kick (H68.1.221A,B,C,E,H). HBCo., feature 35.
- j. Front and back views of silver spoon (H66.327.74). Enlarged insets illustrate monogram and hallmarks. HBCo., feature 34.



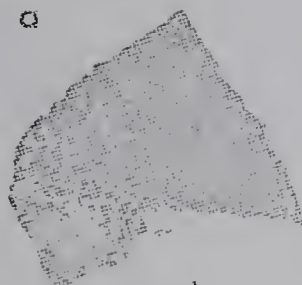
a



b



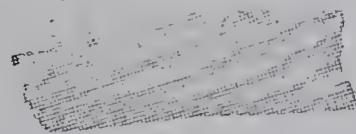
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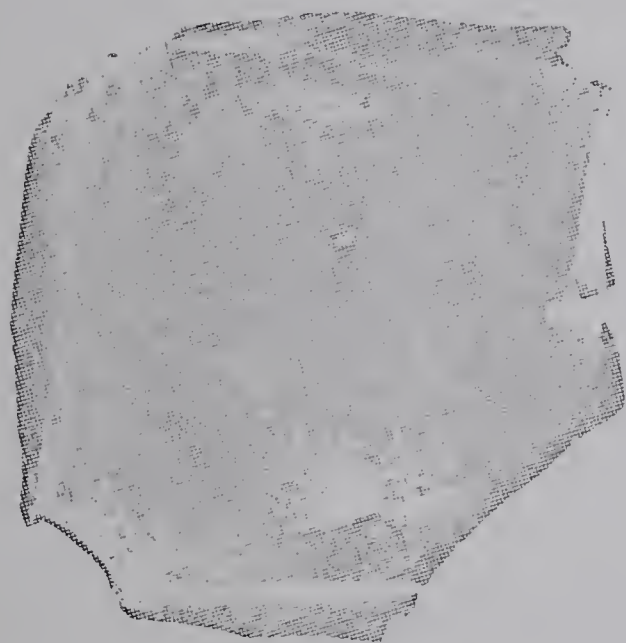
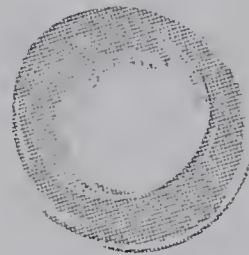
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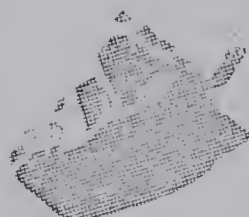
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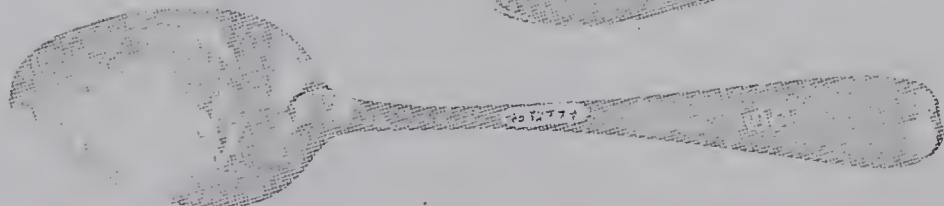
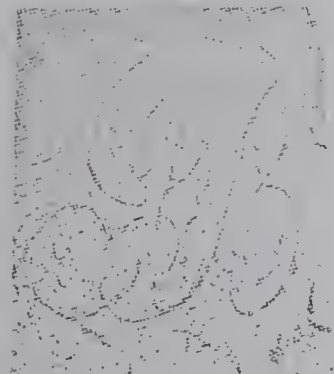
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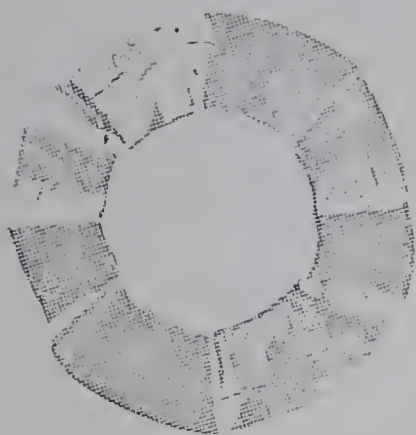
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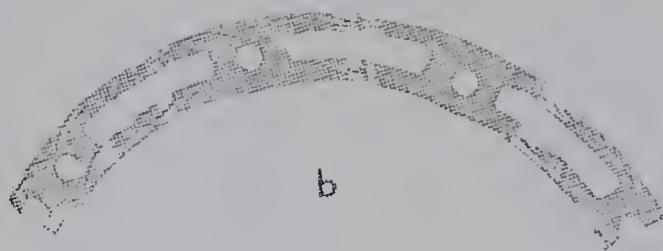
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Plate 8. FORT WHITE EARTH, ORNAMENT, RECREATION.

- a. Silver brooch (H68.1.6). HBCo.
- b. Silver brooch fragment (H68.1.7). HBCo.
- c. Silver ring (H68.1.158). HBCo., feature 35.
- d. Silver necklace (?) fragment (H68.1.614). HBCo., feature 34.
- e. Silver "sunburst" earring (H68.1.264). HBCo.
- f. Fragment of clay pipe bowl (H66.327.107). HBCo., feature 34.
- g. Anterior view of f.
- h. Fragment of clay pipe bowl (H66.327.73). HBCo., feature 34.
- i. Fragment of clay pipe bowl with part of restruck "TD" monogram (H68.1.44). HBCo., feature 34.
- j. Rim fragment of clay pipe bowl with part of "TD" monogram (H68.1.624). HBCo., feature 34.
- k. Rim fragment of clay pipe bowl with part of "TD" monogram (H66.327.233).
- l. Fragment of clay pipe bowl with part of "TD" monogram (H68.1.342B). HBCo., feature 35.
- m. Fragment of clay pipe bowl with part of "TD" monogram (H68.1.476). HBCo., surface.
- n. Fragment of spurless clay pipe bowl (H68.1.690). NWCo., surface.
- o. Fragment of spurless clay pipe bowl (H68.1.359). HBCo., feature 35.
- p. Fragment of clay pipe bowl with spur marked "TD" (H68.1.606). HBCo., feature 40.
- q. Fragment of clay pipe with spur marked "TD". The D is oriented "A" (H66.327.34). HBCo., feature 34.
- r. Fragment of clay pipe with spur marked "TD". The D is oriented "U" (H68.1.606). HBCo., feature 40.
- s. Beads of drawn tubing. HBCo.
- t. Mandrel wound beads (top to bottom: H68.1.54, .84, .287). HBCo.
- u. Transparent tubular bead (H68.1.84). HBCo.
- v. Blue tubular bead (H66.327.221). HBCo.
- w. Deep sky blue tubular bead with white pin stripes (H68.1.839). HBCo.
- x. Spherical beads (H68.1.32, .877). HBCo.
- y. Silver bangle (H68.1.719). HBCo., feature 1.



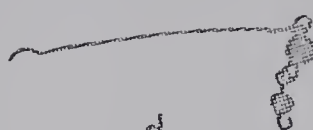
a



b



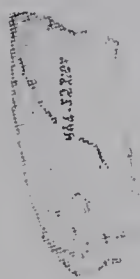
c



d



e



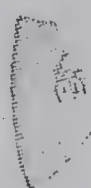
f



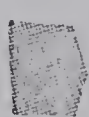
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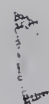
i



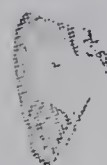
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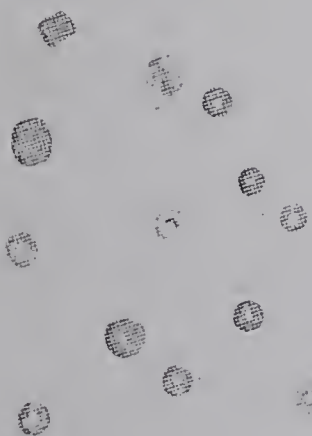
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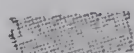
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u



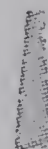
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x



y



CMS.
INS.

Plate 9. FORT WHITE EARTH, RECREATION, MISCELLANEOUS METAL.

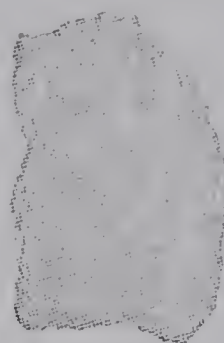
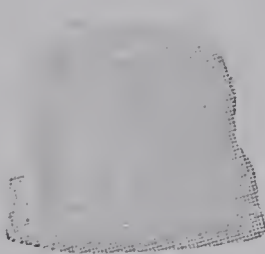
- a. Stone (serpentine?) pipe bowl (H68.1.670). HBCo., feature 34.
- b. Carved steatite pipe bowl (H66.327.273). NWCo., surface.
- c. Piece of cut steatite (H66.327.218). HBCo., feature 35.
- d. Tin fragment (H68.1.246). HBCo., feature 35.
- e. Circular tin fragment (H68.1.936). HBCo., surface.
- f. Fragment of metal bell (H65.321.17). Surface.
- g. Perforated iron fragment (H66.190.77). Surface.
- h. Perforated iron fragment (H68.1.9A). Surface.
- i. Iron object (H65.321.35). Surface.
- j. Iron object (H68.1.952). HBCo., surface.
- k. Perforated iron fragment (H65.321.30). Surface.
- l. Iron strap, beaten along one long edge (H68.1.716). HBCo., surface.
- m. Crumpled copper sheeting (H65.321.37). Surface.
- n. Enigmatic lead object (H68.1.450). HBCo.
- o. Perforated iron fragment, possibly a pintle (H66.327.244). HBCo., feature 35.
- p. Perforated iron fragment, possibly part of a knife (H68.1.107B). HBCo., feature 32.
- q. Lead sprue (H68.1.553). HBCo., feature 1.
- r. Lead sprue (H68.1.31). HBCo., feature 34.



a



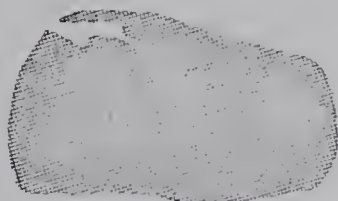
b



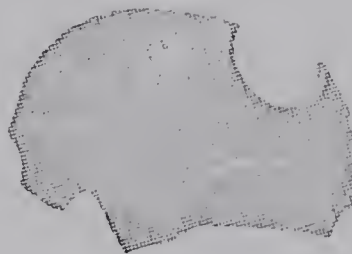
c



d



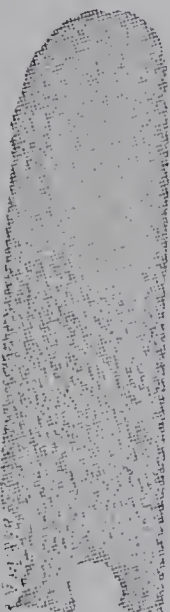
e



f



g



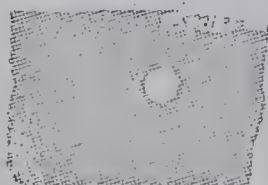
h



i



j



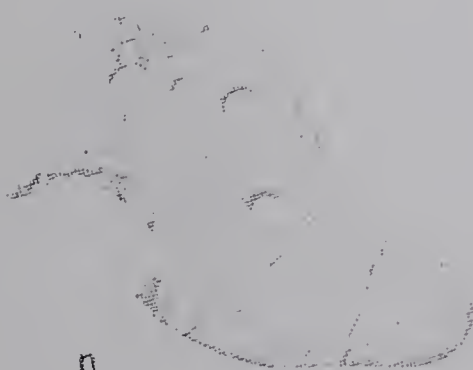
k



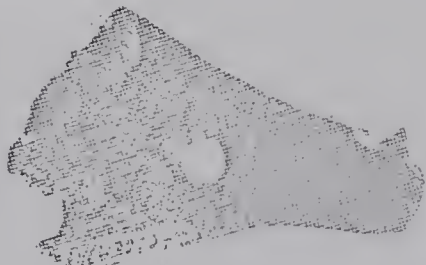
l



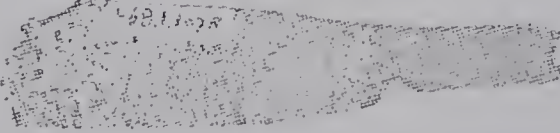
m



n



o



p



CMS.
INS.



q (x1)



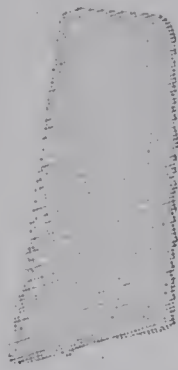
r (x1)

Plate 10. BUCKINGHAM HOUSE, TOOLS, HARDWARE, HUNTING & DEFENCE.

- a. File fragment (H66.271.140). Feature 2.
- b. File fragment (H66.271.206). Exploratory trench at 90W.
- c. File fragment (H66.271.825). Feature 2.
- d. File fragment (H66.271.763). Feature 2.
- e. Crooked awl (H66.271.285). Feature 2.
- f. Fleshing tool of bone, now calcined (H66.271.434C). Feature 2.
- g. Cotter pin (H66.271.150). Feature 2.
- h. Iron bail fastener (H66.271.1038). Feature 2.
- i. Brass bail fastener retaining copper rivet (H66.271.70).
Exploratory trench at 25W.
- j. Copper bail fastener with iron nail (H66.271.893). Feature 2.
- k. Gunflint, calcined (H66.271.31). Feature 2.
- l. Gunspall, calcined (H66.271.508). Feature 2.
- m. Probable gunspall (H66.271.1064). Surface.
- n. Gunspall (H66.271.93). Feature 1.
- o. Musket ball (H66.271.495). Feature 1.
- p. Spent musket ball (H66.271.291). Feature 2.
- q. Ice chisel (H66.271.1008). Feature 2.



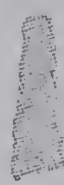
a



b



c



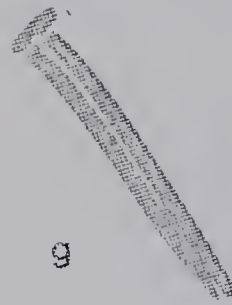
d



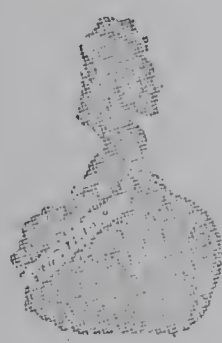
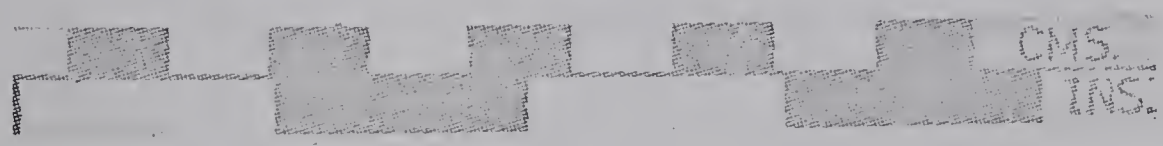
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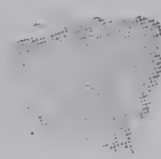
k



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o



p

q(x1/2)



Plate 11. BUCKINGHAM HOUSE, HUNTING, DEFENCE, BUSINESS.

- a. Trigger (H66.271.968). Feature 2.
- b. Possible trigger fragment (H66.271.618). Feature 2.
- c. Frizzen spring fragment (H66.271.313). Feature 2.
- d. Screw (H66.271.21). Feature 2.
- e. Part of brass butt plate (H66.271.671). Feature 2.
- f. Brass gun worm (H66.271.155). Feature 2.
- g. Iron trade point (H66.271.256). Feature 4.
- h. Iron trade point (H66.271.452). Feature 2.
- i. Tip of steel needle (H66.271.502). Feature 2.
- j. Tip of slate pencil (H66.271.542). Feature 2.
- k. Ornate clasp knife with two rusted pieces of the blade (H66.271.850A, B,C). Feature 2.
- l. Decorated bone object (H66.271.851). Feature 2.



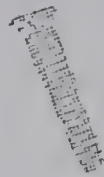
a



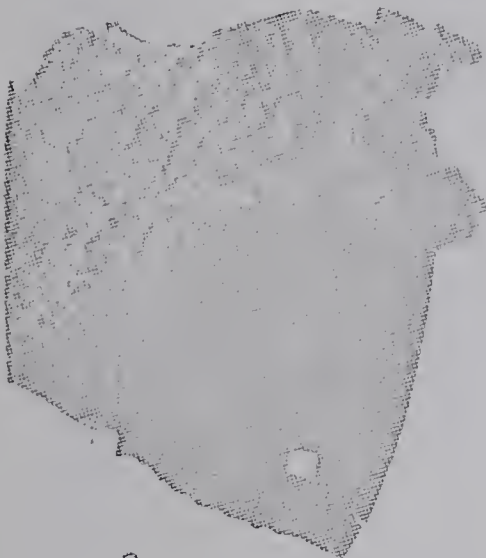
b



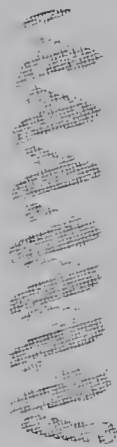
c



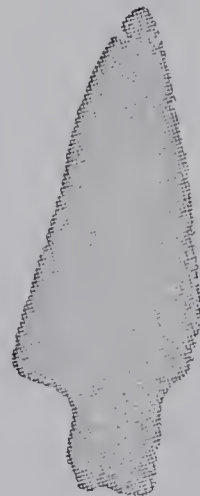
d



e



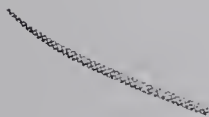
f



g



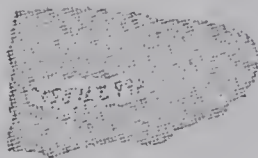
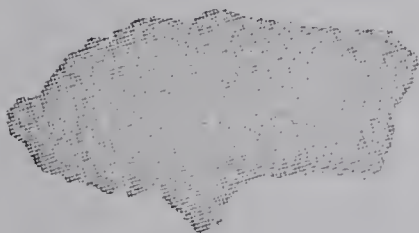
h



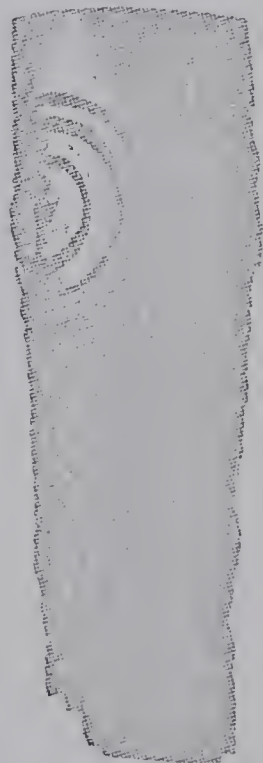
i



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k



l

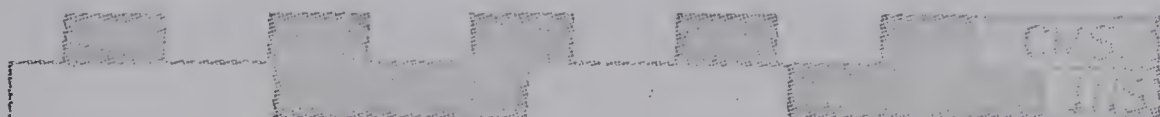


Plate 12. BUCKINGHAM HOUSE, SPIKES & NAILS.

- a. Rose head, flat point (H66.271.1007). Feature 2.
- b. Rose head, flat point (H66.271.878). Feature 2.
- c. Large circular rose head, sharp point (H66.271.1029). Feature 2.
- d. Distorted large circular rose head, sharp point, clenched (H66.271.66). Feature 5.
- e. T head, sharp point (H66.271.969). Feature 2.
- f. T head, point missing, clenched (H66.271.500). Feature 2.
- g. T head, sharp point, clenched (H66.271.992). Feature 2.
- h. T head, sharp point, clenched (H66.271.246). Feature 2.
- i. T head, blunt point (H66.271.906). Feature 2.
- j. T head, blunt point (H66.271.877). Feature 2.
- k. Rose head, sharp point, clenched (H66.271.872). Feature 2.
- l. Small round rose head, sharp point, clenched (H66.271.918). Feature 7.
- m. Small round rose head, sharp point (H66.271.29). Feature 2.
- n. Small round rose head, sharp point, clenched (H66.271.445). Feature 2.



a



b



c



e



g



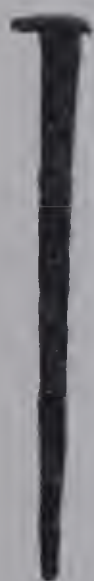
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Plate 13. BUCKINGHAM HOUSE, NAILS.

- a. Large, low circular rose head, sharp point (H66.271.435).
Feature 2.
- b. Large, low circular rose head, sharp point, clenched (H66.271.401). Feature 2.
- c. Large, low circular rose head, sharp point (H66.271.973).
Feature 2.
- d. Small round rose head, point missing (H66.271.899). Feature 2.
- e. T head (altered from rose head), sharp point (H66.271.940).
Feature 2.
- f. Head simple expansion of shank, point missing (H66.271.939).
Feature 2.
- g. Clasp nail, sharp point (H66.271.36). Feature 2.
- h. Clasp nail, sharp point (H66.271.391). Feature 2.
- i. Clasp nail, flat point (H66.271.869). Feature 2.
- j. Clasp nail, sharp point (H66.271.527). Feature 2.
- k. Clasp nail, sharp point, shank clenched in line with long axis
of head (H66.271.886). Feature 2.
- l. Clasp nail, sharp point, shank clenched in line with short axis
of head (H66.271.483). Feature 2.
- m. L head with flat point (H66.271.293). Feature 2.
- n. Flat head, rounded shank, sharp point (H66.271.438). Feature 2.
- o. Small round rose head, sharp point (H66.271.32). Feature 2.
- p. Large, low circular rose head, round shank, point missing (H66.271.843). Feature 2.



a



b



c



d



e



f



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Plate 14. BUCKINGHAM HOUSE, HOUSEHOLD, CLOTHING & ORNAMENT.

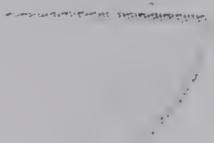
- a. Part of stoneware vessel with folded rim (H66.271.760A,H,I,J). Feature 1.
- b. Stoneware sherd with folded rim (H66.271.784). Feature 1.
- c. Stoneware sherd with folded rim (H66.271.80). Feature 1.
- d. Fork tines (H66.271.767). Feature 2.
- e. Interior of clear glass bottle with strong kick (H66.271.88). Feature 1.
- f. Neck fragment of clear glass bottle (H66.271.91). Feature 1.
- g. Melted clear glass bottle (H66.271.102). Feature 1.
- h. Large brass "Beaver" button (H66.271.255). EW exploratory trench.
- i. Face of small two-piece brass "Beaver" button (H66.271.573). This specimen originally was gilded. Feature 2.
- j. Face of large two-piece brass "Beaver" button (H66.271.453). Feature 2.
- k. Pewter "HBC" button (H66.271.837). Feature 1.
- l. Ornamented brass button (H66.271.582). Feature 2.
- m. Back of spun brass button (H66.271.785). Feature 1.
- n. Brass ring, originally gilded (H66.271.304). Feature 2.
- o. Front of ornate cross set with six stones (H66.271.848). Feature 2.
- p. Back of o.
- q. Translucent sky blue tubular bead (H66.271.732).
- r. Chevron or star bead (H66.271.357).
- s. Translucent cherry red mandrel wound bead (H66.271.895).
- t. Opaque white mandrel wound bead (H66.271.895).
- u. Opaque white mandrel wound bead with green and red inlay (H66.271.723).
- v. Copper tinkle cone (H66.271.539). Feature 2.
- w. Bound rawhide from inside of v.



a



b



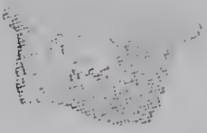
c



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e



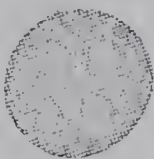
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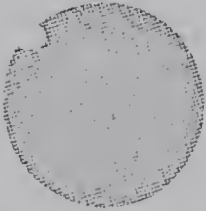
g



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r



s



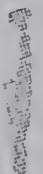
t



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v

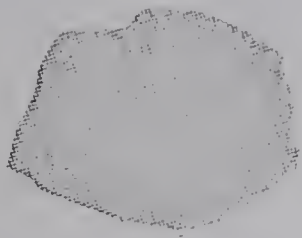


w

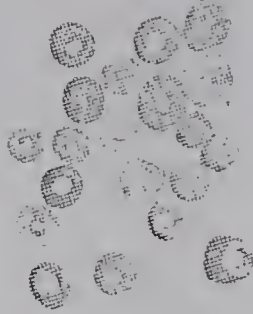


Plate 15. BUCKINGHAM HOUSE, CLOTHING, ORNAMENT, RECREATION.

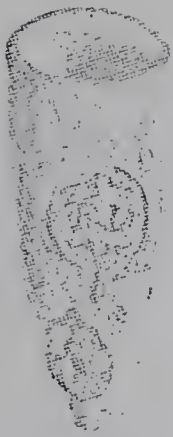
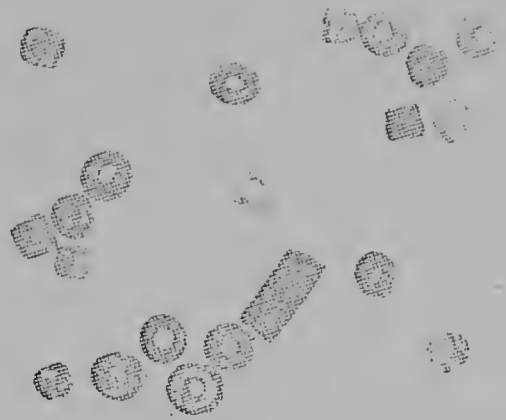
- a. Charred fabric fragment (H66.271.771). Feature 2.
- b. Beads of drawn tubing.
- c. Clay pipe bowl with "TD" monogram (H66.271.498). Feature 1.
- d. Fragment of clay pipe bowl with "TD" monogram as on c (H66.271.595). Feature 2.
- e. Fragment of clay pipe bowl with "TD" monogram as on c, d (H66.271.741). Feature 1.
- f. Fragment of clay pipe bowl with second style of "TD" monogram (H66.271.308, .544). Feature 2.
- g. Fragment of clay pipe bowl with small part of "TD" monogram (H66.271.660). NS exploratory trench at 35N. The fragment is upside down in the photograph.
- h. Fragment of clay pipe stem and spur marked "WM" (H66.271.898). Feature 2.
- i. Fragment of clay pipe bowl with "WM" monogram (H66.271.199). Feature 6.
- j. Fragment of clay pipe bowl with incised lines (H66.271.922). EW exploratory trench at 135W.
- k. Melted clay pipe bowl (H66.271.816). Feature 2.
- l. Clay pipe stem with whittled mouth piece (H66.271.558). NS exploratory trench at 75S.
- m. Clay pipe stem with unaltered tapering mouth piece (H66.271.334). Feature 2.
- n. Fragment of clay pipe stem (H66.271.1070). Surface.
- o. Clay pipe stem with reddish pigment at mouth end (H66.271.376). Feature 2.
- p. Fragment of steatite pipe bowl (H66.271.356). Feature 2.



a (x1½)



b (x1½)



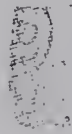
c



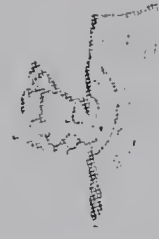
d



e



f



g



h



i



j



k



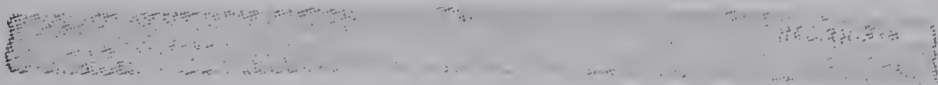
l



m



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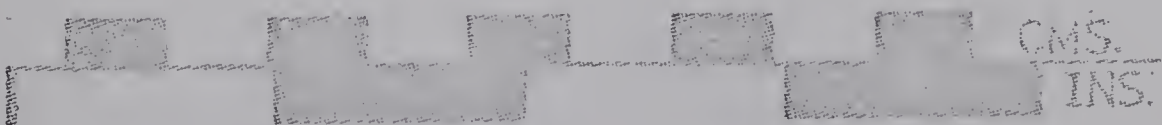
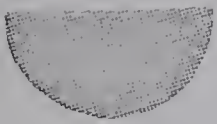


Plate 16. BUCKINGHAM HOUSE, MISCELLANEOUS METAL.

- a. Half disc of brass (H66.271.800). Feature 2.
- b. Folded brass sheeting (H66.271.392). Feature 2.
- c. Brass rod (H66.271.766). Feature 2.
- d. Ornamental brass strip (H66.271.342). Feature 2.
- e. Brass wire (H66.271.730). Feature 2.
- f. Brass wire (H66.271.793). Feature 2.
- g. Perforated brass sheeting (H66.271.490). Feature 2.
- h. Ornamental brass band (H66.271.975). Feature 2.
- i. Brass bangle of thin sheeting (H66.271.1084). Surface.
- j. Brass "washer" (H66.271.421). Feature 2.
- k. Brass "washer" (H66.271.583). Feature 2.
- l. Ornamental brass strip (H66.271.830). Feature 2.
- m. Ornamental iron strip (H66.271.501). Feature 2.
- n. Iron seal? (H66.271.298). Feature 2.
- o. Iron washer? (H66.271.860). Feature 2.
- p. Perforated iron fragment (H66.271.139B). Feature 2.
- q. Perforated ornamental iron band (H66.271.834). Feature 2.
- r. Lead spill (H66.271.654). EW exploratory trench.
- s. Corroded iron object (H66.271.769). Feature 2.
- t. Rolled tin sheeting (H66.271.346). Feature 2.
- u. Rolled tin sheeting (H66.271.405). Feature 2.
- v. Fragment of tin disc, possibly a lid (H66.271.611). Feature 2.
- w. Perforated iron fragment (H66.271.924). Feature 2.
- x. Iron stock (H66.271.692). Feature 2.
- y. Perforated iron strap (H66.271.487). Feature 2.



a



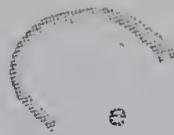
b



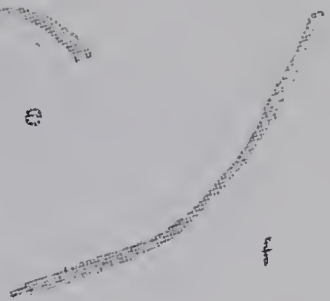
c



d



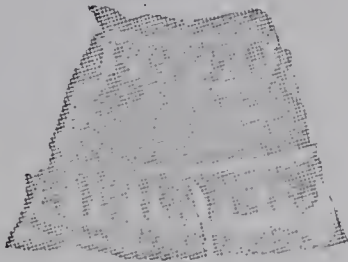
e



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g



h



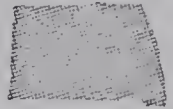
i



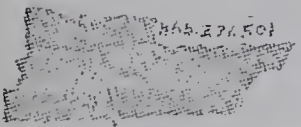
j



k



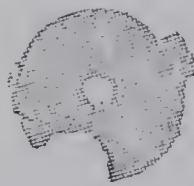
l



m



n



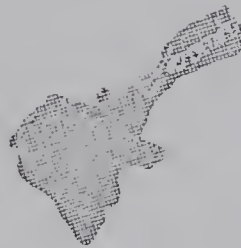
o



p



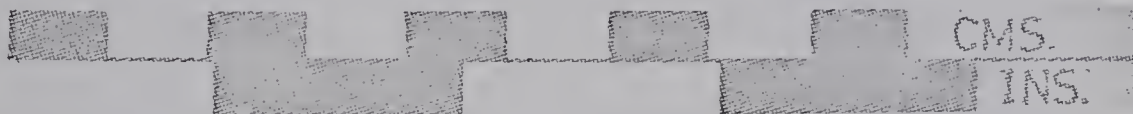
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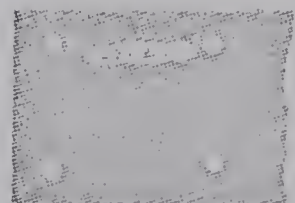
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y

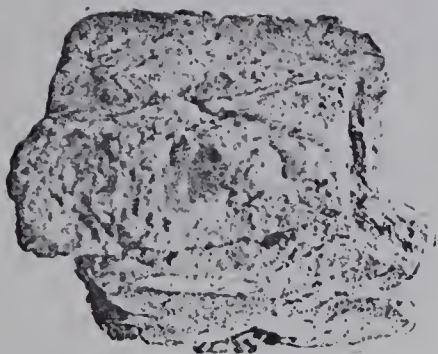


CMS.

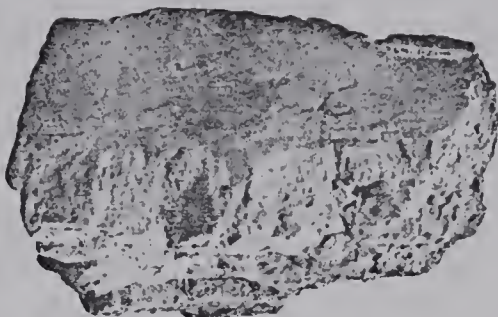
INS.

Plate 17. FORT WHITE EARTH, CHINKING.

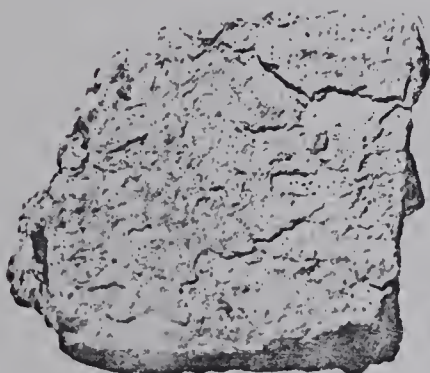
- a. Interior view of chinking from between horizontal wall timbers (H68.1.818). HBCo., feature 35, south wall.
- b. Interior view of chinking from between horizontal wall timbers (H68.1.208). HBCo., feature 35, south wall.
- c. Exterior surface of chinking showing series of coats of white-wash (H68.1.818). HBCo., feature 35, south wall.
- d. Exterior surface of chinking showing brushing technique used to apply whitewash (H68.1.208). HBCo., feature 35, south wall.
- e. Chinking showing joint between horizontal and vertical timbers (H68.1.798). HBCo., feature 35, south wall.
- f. Specimen as in e. Side grain of tenon with post surface to left and end grain to right. HBCo., feature 35, south wall.
- g. Chinking showing exterior and end grain of horizontal timber (H68.1.361). HBCo., feature 35, south wall.
- h. End on view of f.



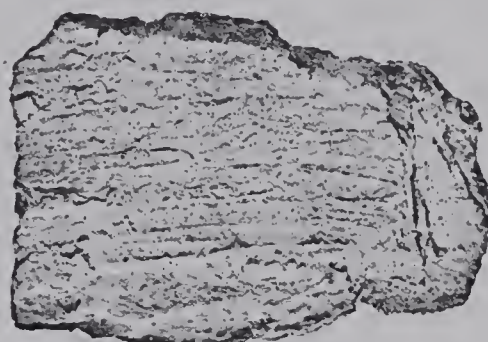
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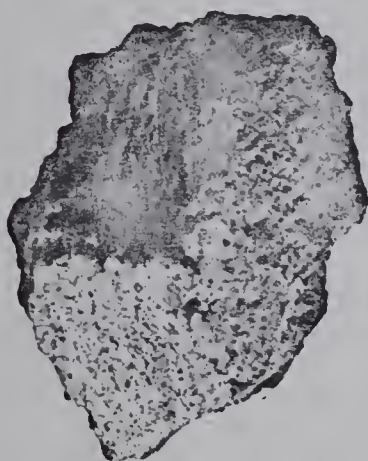
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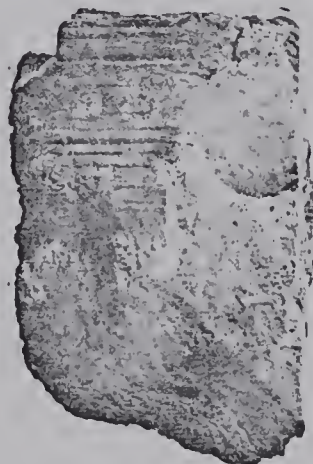
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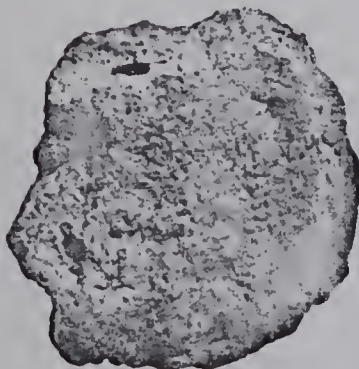
d



e



f



g



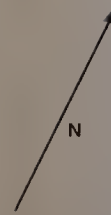
h





FIG 2: BUCKINGHAM HOUSE TRADING POST

Topographic and Feature Map



SCALE (in feet)



CONTOUR LINE

FENCE

PRESUMED LOCATION OF STOCKADE

DEPRESSION

LIMITS OF EXCAVATION

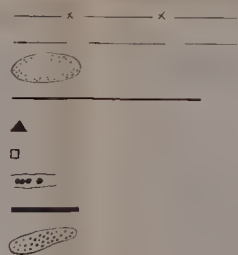
MONUMENT (site datum)

SURVEYED STAKE

POSTS IN TRENCH

HORIZONTAL TIMBER

ASH PIT



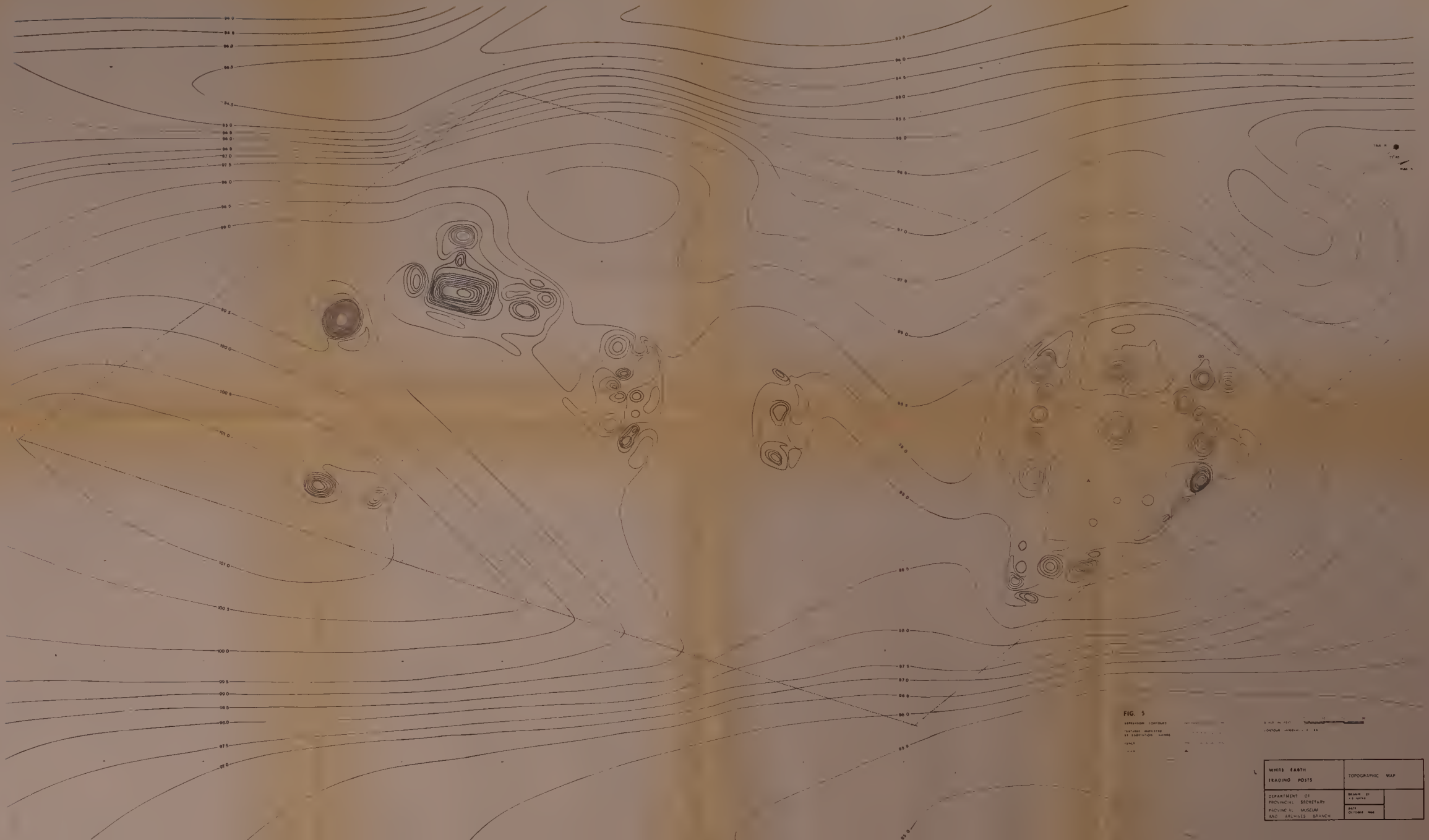
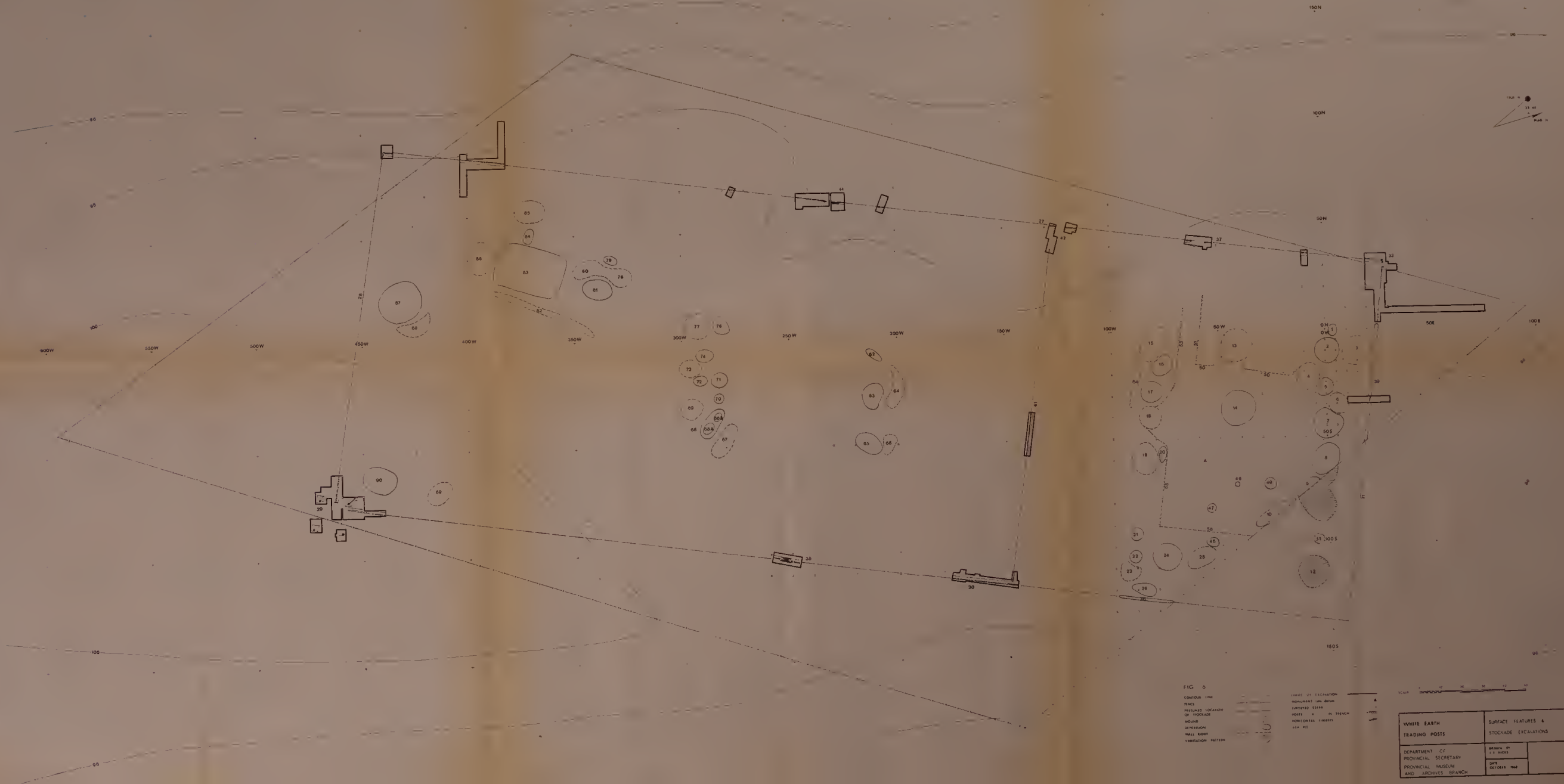


FIG. 5

EXPANDED CONTOUR
 ELEVATION INDICATED
 BY CONTOUR LINE
 1000
 1000

1:100,000
 1:100,000

WHITE EARTH TRADING POSTS	TOPOGRAPHIC MAP
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